Telephone Engineer and Management

FEBRUARY 1, 1957

Vol. 61. No. 3

THE NATIONAL TELEPHONE MAGAZINE

FONE FOYER

FEATURING IN THIS ISSUE

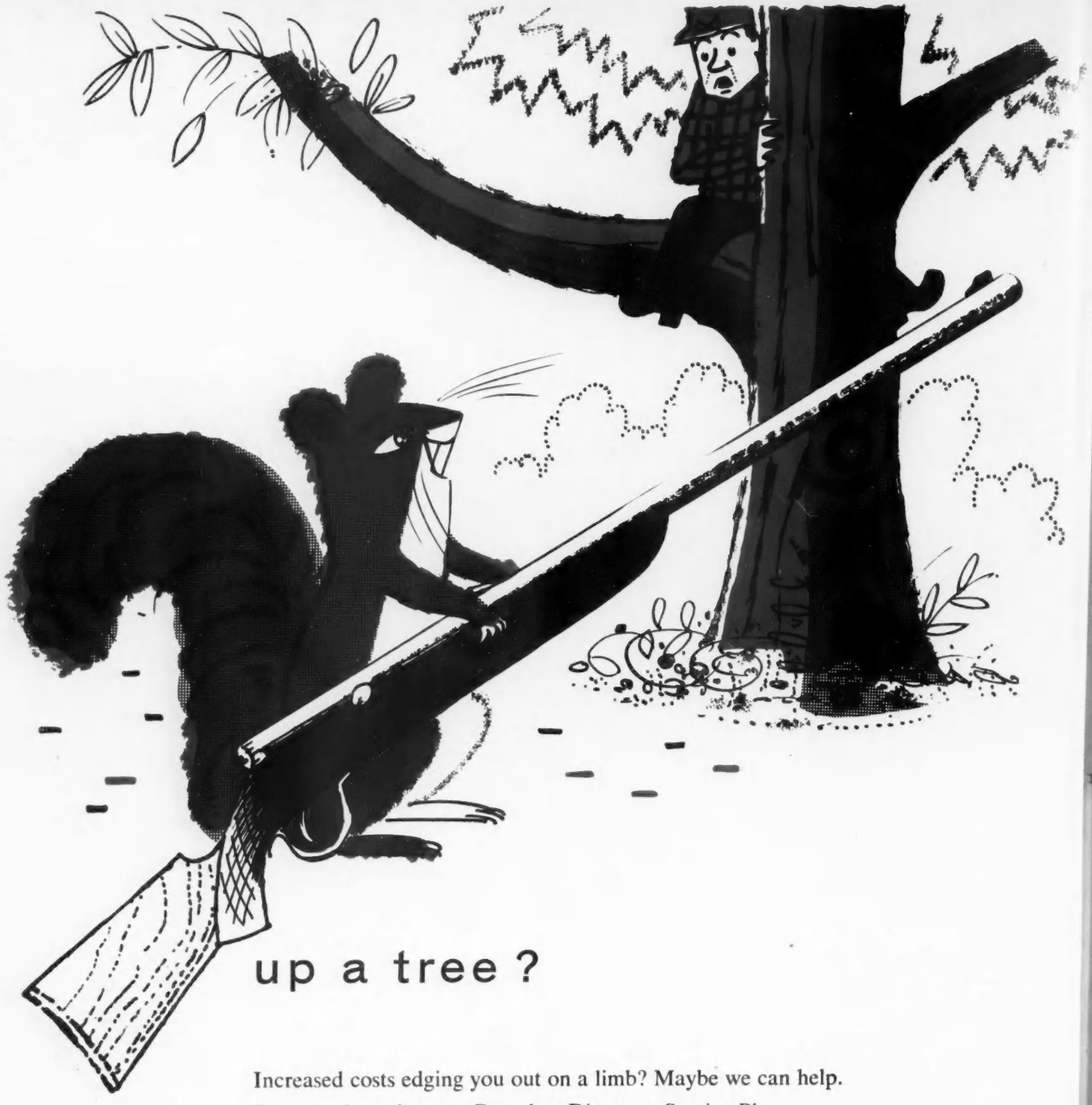
INDEPENDENTS AND DIRECT DISTANCE DIALING, by L. A. Hodson

USELESS PROTECTION, by John S. Reed

OUR TELEPHONES WENT TO THE FAIR, by Bill Brooks

INDUSTRY NEWS BRIEFS ☆ FLORIDA CONVENTION REPORT

PUBLIC LIBRARY
FEB 12 1957
DETROIT



up a tree?

Increased costs edging you out on a limb? Maybe we can help. Records show that our Complete Directory Service Plan is operating successfully for independent telephone companies in 4400 communities. We handle everything. Turn out good looking directories . . . with fewer headaches, more income.

Like to know how? We'll be happy to show you. Just call or write our nearest office.

GENERAL SYSTEM

GENERAL TELEPHONE DIRECTORY COMPANY

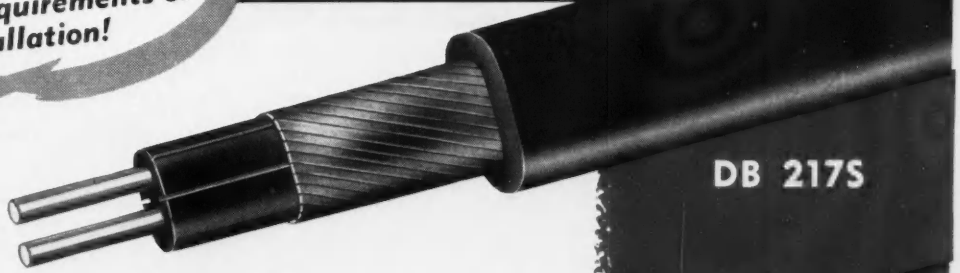
1800 Busse Highway • DES PLAINES, ILLINOIS • VAnderbilt 4-2164

Divisional Sales Offices

COLUMBIA, Mo. • 811 Cherry Street • Gibson 2-6907
DURHAM, N.C. • 108 E. Parrish Street • Tel: 5133
ERIE, Penna. • G. Daniel Baldwin Building • Tel: 2-4187
FORT WAYNE 2, Ind. • 229 E. Berry Street • Eastbrook 3477
LEXINGTON, Kentucky • 157 Walnut Street • Tel: 4-7626
LONG BEACH 15, Calif. • 1775 Ximeno Ave. • HEmlock 3-7441
MADISON, Wisconsin • Tenney Building • ALpine 7-1667
SAN ANGELO, Texas • 110 South Taylor St. • Tel: 6738
SPOKANE, Wash. • 108 N. Washington St. • MAdison 4-4336
SPRINGFIELD, Ill. • Myers Bros. Building • Tel: 8-3425

OF THESE 3 TYPES OF
SUPERIOR
DIRECT BURIAL WIRE
...one will "do the trick" for you!

Buy SUPERIOR DIRECT BURIAL WIRE to match the requirements of your installation!



DB 217S

1 **Need wire having maximum resistance to damage from road or farm machinery and implements . . . or other similar sources?**

Order the SUPERIOR DB No. 217S with spiraled flat steel strip shield and green jacket.

DB 217B

2 **Need wire to resist damage from insects and rodents . . . or peculiar soil conditions which are conducive to increased lightning activity?**

Order SUPERIOR DB No. 217B with longitudinal bronze shield and yellow jacket.

DB 217

3 **Need wire for direct burial installations in areas where conditions are normal and no specific hazards are likely?**

Order SUPERIOR DB No. 217 non-armored type with red jacket.

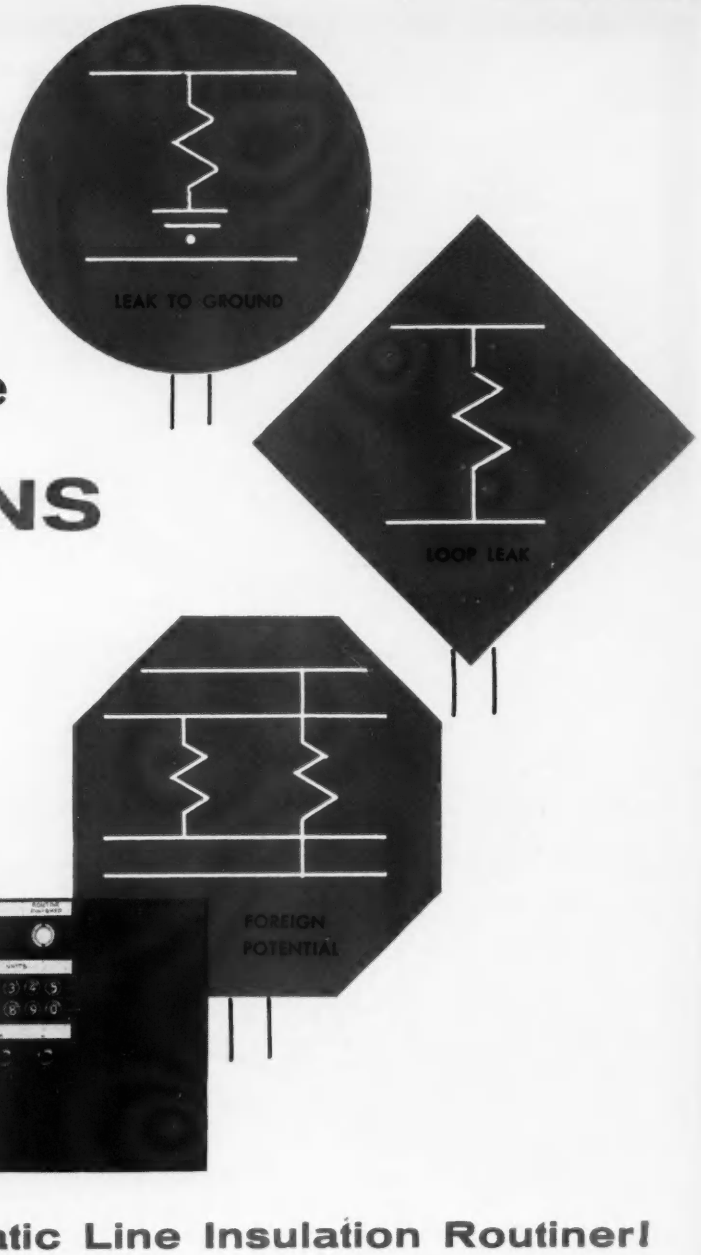
All three types provide excellent electrical and physical characteristics. High tensile strength 17 gauge copper conductors are insulated with polyethylene. Tracer ridge on the core runs the length of the wire. The high grade polyvinyl chloride jacket offers great resistance to water, oils, alkalis and earth acids. Also supplied in 16 gauge copper conductors on request.

INDEPENDENT

Order SUPERIOR Direct Burial Wire NOW or write for complete information to

SUPERIOR CABLE

SUPERIOR CABLE CORPORATION • Hickory, North Carolina



Can you spot these DANGER SIGNS in time?

it's easy with the **Automatic Line Insulation Routiner!**

Find line insulation faults *before* they become trouble tickets. Here's how. Apply the **Automatic Line Insulation Routiner** to any Strowger exchange having a regular switch train. Push a button, and the Routiner checks the insulation condition of every subscriber line. Automatically, it tests for leak to ground, loop leak, and foreign potential. Fast, too! It tests 30 lines per minute; a 5000-terminal office can be completely routined in less than three hours.

Use the Routiner to cut your routining costs, spare maintenance men, and improve service. Write today for Circular 1811. Address: *Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7.* Or call, *HAymarket 1-4300.*

AUTOMATIC ELECTRIC

ORIGINATORS OF THE DIAL TELEPHONE

GENERAL SYSTEM INDEPENDENT

TELEPHONE ENGINEER & MANAGEMENT

THE NATIONAL TELEPHONE MAGAZINE

FEBRUARY 1, 1957

Vol. 61 No. 3

RAY W. SMITH, Publisher and Editor
JOHN G. REYNOLDS, Managing Editor
ROY F. SMITH, Advertising Director
DONALD C. SORENSEN, Advertising Manager
HELEN G. McCORKLE, Production Manager
EMILY BUDDE, Editorial Assistant
JOHN S. REED, Technical Editor
BILL CORMAN, Small Company Editor
ROLAND DAVIES, FRED HENCKE, Washington Editors
JAY G. MITCHELL, Questions & Answers Editor
MRS. W. L. FAIR, E. E. GENTRY, PHIL GLANZER, GEORGE SHILAKES, C. J. REID, Field Correspondents
PAT LAWHORN, Circulation Manager

TELEPHONE ENGINEER AND MANAGEMENT

Published on the 1st and 15th of each month by Telephone Engineer Publishing Corp.

Executive, Editorial and Advertising Offices 7720 N. Sheridan Road, Chicago 26, Ill. Telephone: ROgers Park 4-5040.

Publication Office: 600 South Seventh St., Rochelle, Ill.

Single Copies, U. S. and possessions, 50¢. Subscription Rates: $3.00 per year for U. S. and Possessions; Canada, $3.50 per year; all other countries, $5.50.

Entered as Second Class Matter at the Rochelle, Ill. Postoffice under the act of March 3, 1879.

Copyright 1957 by Telephone Engineer Publishing Corp., Chicago, Ill.

Table of Contents

ARTICLES

Editorial — "Three Dimensional Engineers" 31
The Independent Telephone Company and DDD ..... L. A. Hodson 33
Our Telephones Went To The Fair ..... Bill Brooks 37
Not A Formula — But A Way Of Life 42
Questions & Answers ..... Jay G. Mitchell 46
Fuseless Protection ..... John S. Reed 50

FEATURES

Coming Conventions 6
Industry Newsletter 8
Across The Editor's Desk 10
Washington Newsletter 14
Revenue Boosters 26
Safety Corner 28
High Speed Toll Ticketing Equipment 54
Florida Convention Report 57
Industry News Briefs 63
The Back of The Book ..... John G. Reynolds 86

DEPARTMENTS

Professional Services 71
Buyers' Guide 72
New Products 72
Classified Advertising 74
Advertisers' Index 85

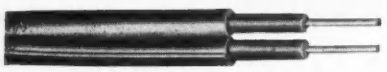
FRONT COVER

"Fone Foyer" of Inter-County Telephone & Telegraph Co. is recessed about 15 ft. from property line. It features loud speaking system for calling people who placed LD calls, comfortable chairs and out of state directories. President, J. N. JOHNSON reports — "the 'Fone Foyer' is never closed and is doing a wonderful job from the standpoint of revenue, public relations, etc."

IN THE NEXT ISSUE

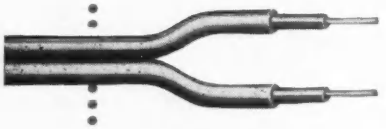
Look for these valuable articles in the February 15 issue of TELEPHONE ENGINEER & MANAGEMENT (1) "Maintenance Problems of the Independent Industry," by B. L. Arnold; (2) "Profits & Service Through Better Management," by James L. Morrison; (3) "Outdoor Booths," by John S. Reed, and all regular TELEPHONE ENGINEER & MANAGEMENT features.

ENDURPRENE
Drop Wires



Twisted Pair

Parallel Reinforced



Parallel Figure 8

for LONGER Service Life!

DISTRIBUTED BY

KELLOGG — DIVISION OF IT&T

KELLOGG SWITCHBOARD AND SUPPLY COMPANY

A Division of International Telephone and Telegraph Corporation

MANUFACTURED BY

GENERAL INSULATED WIRE WORKS, INC. PROVIDENCE 5, R.I.

COMING CONVENTIONS

MINNESOTA Telephone Association, Inc., Radisson Hotel, Minneapolis, Feb. 18-20.

LOUISIANA Telephone Association, Captain Shreve Hotel, Shreveport, Feb. 27-28.

KENTUCKY Independent Telephone Association, Phoenix Hotel, Lexington, Mar. 5.

TEXAS Telephone Association, Gunter Hotel, San Antonio, Mar. 28-29.

IOWA Independent Telephone Association, Fort Des Moines Hotel, Des Moines, Apr. 2-3.

OHIO Independent Telephone Association, Deshler Hilton Hotel, Columbus, Apr. 16-17.

INDIANA Telephone Association, Claypool Hotel, Indianapolis, May 8-9.

WISCONSIN State Telephone Association, (Hotel Not Selected) May 15-16.

ILLINOIS Telephone Association, Pere Marquette, Peoria, May 22-23.

KANSAS Telephone Association and **MISSOURI** Telephone Association, Town House Hotel, Kansas City, Kans., May 27-28.

PENNSYLVANIA Independent Telephone Association, Buck Hill Falls Inn, Buck Hill Falls, June 4-5.

MAINE Telephone Association, **NEW HAMPSHIRE** Telephone Association, and **VERMONT** Telephone Association, Wentworth-by-the-Sea Hotel, Portsmouth, N. H., June 4-6.

CALIFORNIA Independent Telephone Association, Ambassador Hotel, Los Angeles, June 5-6-7.

WASHINGTON Independent Telephone Association, and **OREGON** Independent Telephone Association, Davenport Hotel, Spokane, Wash., June 13-14-15.

NEW YORK State Telephone Association, Scaroon Manor, Schroon Lake, June 17-19.

ARKANSAS Telephone Association, Arlington Hotel, Hot Springs, Sept. 16-17.

ROCKY MOUNTAIN Telephone Association, Hotel Utah, Salt Lake City, Sept. 19-20.

NORTH CAROLINA Independent Telephone Association, Carolina Hotel, Pinehurst, Oct. 3-4.

UNITED STATES Independent Telephone Association, Conrad Hilton Hotel, Chicago, Oct. 14-16.

● Derrick and digger are unaffected by ground obstacles. Suspending the digger from the winch line, the full length of the derrick is utilized for reaching over this fence.

● Equipped with a Tel-E-Lect FLD (Fold Over Derrick Storage Kit) this truck can be readied automatically for work or for over-the-road travel in a few minutes.

Power IN THE STRETCH!

TEL-E-LECT...takes it out from under the hood...puts it into the ground

● **Unleash any power-packed TEL-E-LECT-equipped utility truck** and you have a real tiger for digging pole holes, regardless of soil conditions. Tel-E-Lect products are designed to get the most out of your present truck. *They convert energy under the hood into profitable performance on the ground.* Because they are specially engineered for your kind of work, you can do a better job and do it faster and cheaper!

● **Reachability:** Tel-E-Lect equipment works from any angle . . . up hill, down hill, across fences and over other obstacles. Digger-derrick units can be readied for work in two minutes and with complete safety; no legs to set, nothing to assemble. Move a single lever and the digger is ready to work.

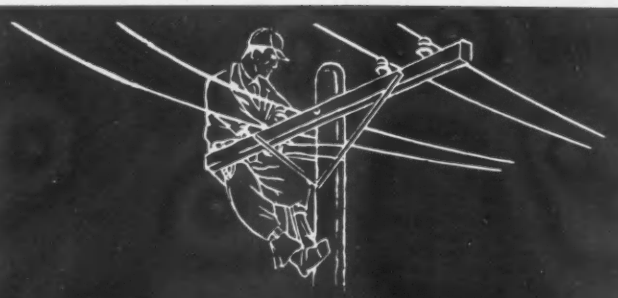
● **Mounts on any Truck:** "A" or "T" frame *Self-Storing* derricks for either front or rear operation are available for most popular trucks. Your own mechanic can convert your truck into an efficient, profitable utility rig in a few hours.

Consult your local phone directory for the nearest Tel-E-Lect distributor or write:

TEL-E-LECT
PRODUCTS, INC.
10013 MINNETONKA BLVD.
MINNEAPOLIS 26, MINNESOTA

Manufacturers of Winch & Digger Drive Systems ● Mechanical and Hydraulic Derricks ● Derrick Storage Kits ● and Utility Truck Bodies

INDUSTRY NEWSLETTER



Smithsonian Exhibit Planned

THE UNITED States Independent Telephone Association's (USITA) special committee named to work with the Bell System in the creation of a permanent telecommunications exhibit in the Smithsonian Institution in Washington, D. C. met early in January in New York and Washington with representatives of the Bell System and the Smithsonian to finalize arrangements for the display. Members of the committee are Chairman Bruce Quisenberry, O. C. Bailey, Frederic W. Haupt, and R. B. Wiseman.

It is expected the exhibit will be formally opened early in March with appropriate ceremonies in which USITA representatives and the Bell System will participate. Plans call for the ceremony to be widely publicized.

This is to be a non-commercial, historical, and educational exhibit, representative of the entire telephone industry. It will portray the invention and early history of the telephone, giving due recognition to those who contributed to the invention and featuring a bust of Alexander Graham Bell. Transmission and switching systems will be included. There will also be an exhibit of original telephone instruments, ancient sets of varying periods, and a colorful display of various modern day handsets.

NARUC Meeting Scheduled

MEETING of the Special Telephone Committee of the National Association of Railroad & Utilities Commissioners will be held immediately prior to the NARUC Executive Committee session Feb. 28 in Washington, it has been announced. The telephone group will meet Wednesday, Feb. 27, while the Telephone Staff Committee will convene Feb. 26 and hold a joint session with the commissioners the following day.

Principal business is expected to be the revision of the separations manual, directed under a resolution passed at last year's NARUC convention. It is expected that an organization will be set up for the writing job, and that comments of the member commissions to a staff subcommittee will be discussed.

Although the outlines of the new separations manual have been established by agreements on separations plans by the NARUC and the Federal Communications Commission — most recently the "Modified Phoenix Plan" developed at the 1954 NARUC convention and ultimately approved early last year by the FCC. But the question of disparities between interstate and intrastate toll rates goes on without solution.

In that connection, interest has been aroused by the recent decision of the Florida Railroad & Public Utilities Commission in a Peninsular Telephone Co. rate case.

The commission reached a separate exchange service rate base, and based its findings on rate of return and effect of the higher rates on that separate standard.

It declared "It is apparent from the record that state toll is not contributing its fair share to the overall earnings of the utility . . . However, we can do nothing about the state toll rates in this proceeding." (Because the pattern in the state is set by Southern Bell Telephone & Telegraph Co. rates.)

The commission went on, however, to comment "It does not follow, however, that the deficiencies of Peninsular's earnings, from its state toll operations, will be eliminated by the exchange rates prescribed in this proceeding. We do not intend to allow low earnings on toll to be recouped by high earnings on exchange."

In its order, the commission made quite a point of substanially higher earnings on interstate toll as compared to state toll operations. In refusing to combine state toll and exchange operations to arrive at a rate decision for services within its jurisdiction as a whole, the commission declared that if anything is combined for ratemaking purposes, it should be interstate and intrastate toll.

It declared that for the test year, its staff's calculations showed a rate of return of 5.87% for Peninsular as a whole, 5.50% for exchange service, and 7.15% for combined state and interstate toll.

Expansions & Improvements

CONSTRUCTION program totaling $115,900.00 is being planned by the Bear River Telephone Co., Tremonton, Utah, for the year 1957, according to Vincent Chiodo, manager. Largest single project is for Thiokol Corp. which will cost $48,000.00. Other construction planned includes switchboard additions in Tremonton amounting to $26,000.00; a complete replacement of the entire switchboard at Fielding, $18,500.00; outside plant additions, $13,300.00; and rural additions outside Fielding, $6,000.00 . . .

A new dial telephone system went into full operation at Gallatin, Mo., Dec. 29, according to announcement by Inter-County Telephone Co. officials. The conversion climaxed more than two years of planning and actual construction on the new system. The telephone company, granted a loan of $437,000 by REA to convert the Gallatin and Jameson systems, has already spent about $350,000 on the project . . . Plans for installing dial equipment at Lebanon, Mo., have been announced by George A. Hearne, vice president and general manager of United Tel. Co. According to Hearne, more than $300,000 has been spent on additional plant improvements during the past five years. It is estimated the dial equipment and related plant additions will require approximately an additional $398,000 gross expenditure at Lebanon . . . The new dial equipment will go into service at Rolla, Mo., about May 5, United Tel. Co. announced last month. The firm said the new installation will have cost about one million dollars.

Two construction projects of Pacific Tel. & Tel. Co. in Pacific Northwest, one providing for carrier systems on routes from Seattle, Wash., to points in eastern Washington and northern Idaho, and the other providing for cable between Ephrata and Othello, Wash., were approved by FCC. The $654,300 carrier project will add 33,600 channel miles of facilities. The Ephrata-Othello cable, a $451,600 project involving N carrier installation, stems from military demands and increased farming activity in the area . . . . Another FCC approval went to Wisconsin Tel. Co. and American Tel. & Tel. Co., for a 37-mile intercity toll cable between Stevens Point and Wausau, Wisc., estimated to cost $685,100.

A record $98,000,000 will be spent by Michigan Bell Tel. Co. for new construction in 1957, President William M. Day has announced. One of major technological advances included in 1957 program will be inauguration of direct distance dialing at Flint and Grand Rapids. In addition to expansion of its direct dialing facilities, Michigan Bell will step up its expansion and service improvement program in every exchange in its territory. Included in the program are plans to convert six exchanges to dial operation and to bring dial development up to 96% of total telephones. At present, over 20% of all long distance calls originating in Michigan Bell exchanges are now dialed direct by the customers, about 50% of customers can dial some of their long distance calls, and about 10% of the total can dial nationwide. Michigan Bell, which now serves 2,559,000 telephones compared with 1,378,261 ten years ago — an 86% growth — has set a new construction record every year since 1950, Mr. Day pointed out.

Highlights

MARION-OAK Ridge Tel. Co., Inc., Marion, La., filed articles changing its corporate name to United Tel. Co., of Louisiana, Inc. . . . Western Reserve Tel. Co., Inc., Hudson, Ohio granted charter of incorporation listing capital stock of 250 shares. Incorporators; George D. Massan, George C. McConnaughey, David C. Steadley; and registered agent listed as George C. McConnaughey, 33 North High Street, Columbus, Ohio.

Paul E. Knapp has been named manager of Dunn

"STEADY NOW!"

Mutual Aid Telephone Co-op., Killdeer, N. D. Knapp has been office manager for the telephone co-op at Carrington, and formerly was office manager for the telephone co-op at Circle, Mont. . . . Everett W. Kahl, Iowa division manager for Iowa Continental Tel. Co., has announced the following personnel changes: M. E. Houck named district commercial manager for eastern half of state; Carleton Haven named Iowa division engineer; Lester W. Walsh named district plant supervisor for eastern part of Iowa.

Establishment of headquarters office at Minot, N. D., will be one of next steps in rapidly spreading operations of Souris River Tel. Mutual Aid Corp. Paul Froemming of Minot is manager of the RTA group which is expanding its telephone service to serve 5,272 subscribers in Bottineau, McHenry, McLean, Mountrail, Pierce, Renville, Sheridan, Ward and Wells counties . . . Grand River Mutual Tel. Co., Princeton, Mo., took over operation of the Western Light & Tel. Co., exchanges at Linneus, Browning and Meadville. Buford Wilson, Linneus, has been retained as local manager of the three exchanges. Future plans call for installation of dial service . . . John H. McCarthy, 51, chairman of the Michigan Public Service Commission since July 1949, has resigned, effective Jan. 5. McCarthy, who announced his impending resignation last spring, but did not set a date, said he had no plans for the immediate future . . . Russell Brandt has been elected president of the Shiawassee (Mich.) Telephone Co. Other officers named were: J. V. Polhemus and Earl Arthur, vice president; Carl Rann, secretary and Marshall Spalding, treasurer.

Send A Copy To Your Friends

. . . . . Without Charge

TELEPHONE ENGINEER
PUBLISHING CORP.
7720 N. Sheridan Rd.
Chicago 26, Ill.

Please send a free copy of the Feb. 1, 1957 issue of the TELEPHONE ENGINEER & MANAGEMENT with my compliments to the persons listed below:

To .....
Address .....
City ..... State .....

• • •

To .....
Address .....
City ..... State .....

• • •

To .....
Address .....
City ..... State .....

• • •

To .....
Address .....
City ..... State .....

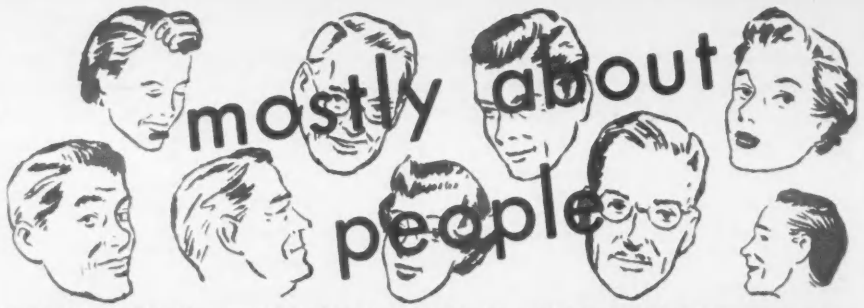
• • •

To .....
Address .....
City ..... State .....

• • •

To .....
Address .....
City ..... State .....

Sender .....
Company .....
Address .....



ACROSS THE EDITOR'S DESK

The Fields Brothers

THE FOUR FIELDS brothers of Trussville, Ala., are mighty happy these days as they have now ordered their equipment for a dial conversion following 10 years of building up the property. After their purchase of the Trussville Telephone Co. a decade ago the brothers rolled up their sleeves and now report 800 stations are receiving excellent service compared to the 300 originally served when they took over. Their local newspaper is hailing the successful effort of the Fields to bring modern service to their area.

Seymour Dedication

MORE ABOUT Seymour, Indiana! Official dedication of the new exchange was held January 17 starting off with a dinner party hosted by vice president *E. S. Welch*. An open house at the new exchange for the general public was held prior to the dinner with excellent attendance of patrons of the company.

Judd Perkins

JUDD PERKINS, director of public relations of the General Telephone Co. of Michigan, was one of the principal speakers of the recent convention of the Central States Speech Association held in Chicago. His subject "Staff and Line Communication in Business" is a very interesting reprint from the Fall issue of the Central States Speech Journal.

Allen S. Crane

ALLEN S. CRANE, formerly chief operating executive of the Gary Group companies prior to their merger with the General Telephone Corp., is hospitalized with a heart ailment at Chicago Wesley Memorial Hospital, 250 E. Superior St., Chicago, Ill. Cards or letters addressed to him in Room 1254 will reach him and he would be happy to hear from his friends. Since the merger Allen has not been active in the telephone field and, with his family resides in Wilmette, Illinois.

"Thanks For The Letters"

OUR MAIL is heavy these days and we're pleased with the many letters commenting on "Telephone Engineer & Management's" new "dress." We're glad you like the changes, the new editorial features, and the publication of TE&M on a semi-monthly schedule. Thanks for writing us! Your comments and suggestions are always welcome.

Also, we are pleased with reader comments on the new management training series — "Profits & Service Through Better Management," by James L. Morrison. Chapter III of Mr. Morrison's article will appear in the February 15th issue. If you need extra copies of Chapter I and II let us know.

Subscribe Now

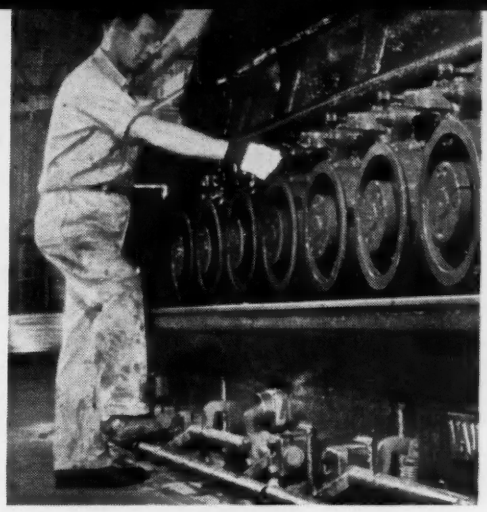
If you are not a regular reader of TELEPHONE ENGINEER and MANAGEMENT you will probably wish to place yourself in position to receive the big Spring Construction issue . . . plus . . . 23 other big issues that will be of help to you every day throughout the year.

1 Year-24 Big Issues-$3.00

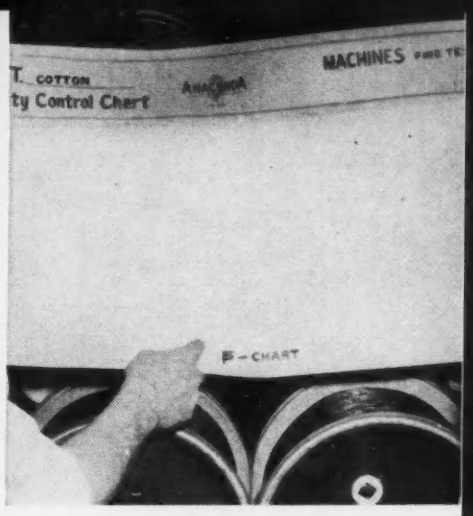
TELEPHONE ENGINEER & MANAGEMENT
7720 Sheridan Road
Chicago 26, Illinois
Please send TELEPHONE ENGINEER & MANAGEMENT to me for 1 year.

Name (Please Print) .....
Company .....
Street Address or Box Number .....
City Zone State .....

EXTENSIVE RESEARCH FACILITIES at Anaconda help get the answers to many of your cable problems.



MODERN MANUFACTURING METHODS and skilled technicians combine to produce highest quality products.



STRICT QUALITY CONTROL procedures insure fabrication of cable to exacting standards—for peak performance.

EXPERT DESIGN ENGINEERS develop telephone cable with superior transmission qualities, long life.

EXPERIENCE WITH ALL TYPES OF CABLE—aerial, direct burial, duct—is put to work on your problem.

PIONEERING EFFORTS IN COMMUNICATION CABLE for the Armed Forces—spiral-four, coaxial and signal cable, many others.

Now Anaconda puts its full resources "ON CALL" to you

Whether your problem is cable selection, application, a special engineering question, service or quality control—Anaconda will be happy to lend you a helping hand. For example . . .

Perhaps you don't have the facilities to check the quality of incoming cable—Anaconda's quality-control check on outgoing products can do this for you.

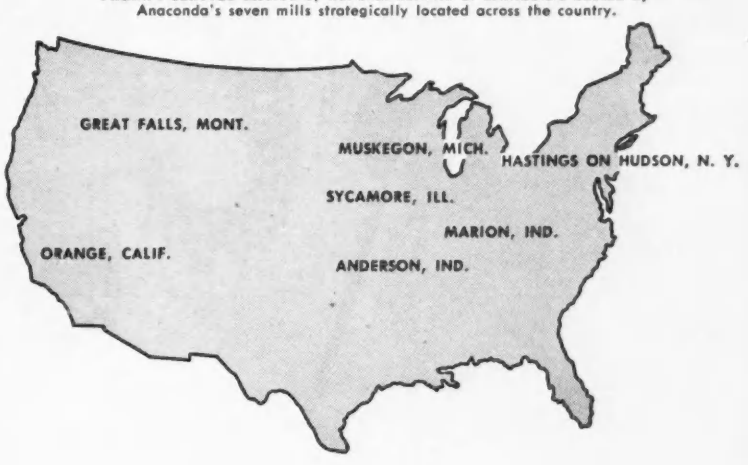
Or perhaps you have a technical question – the answer may have already been uncovered by Anaconda engineers.

In these and many other ways, Anaconda offers to help. Just call the *Man from Anaconda*—offices in 27 cities. Ask him, too, about Anaconda's line of telephone (type ATC) cables: **1. Aerial and duct cable. 2. Self-supporting cable. 3. Direct-burial cable. 4. Rural and urban distribution wire.**

Phone or write: Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y., or any of our 27 District Offices.

56315

PROMPT SERVICE assured by national network of distributors backed by Anaconda's seven mills strategically located across the country.



PHONE THE MAN FROM ANACONDA®

FOR

TELEPHONE CABLE

eye-catching! . .

Automatic's new colored paystations

Your customers will really take to the new "80-series" Autelco paystations in color. Bright, cheerful colors make these paystations easier to see, help dress up their surroundings, make new installations easier to "sell" to merchants, mean more paystation revenue rolling in each month.

New "80-series" paystations offer a choice of eight colors—full color or two-tone. They also offer all these famous Type 80 Monophone features:

Lighter, easier-to-hold handset
True-to-life transmission; lower sidetone
Easier, surer dialing; big, clear markings
Durable, moistureproof Koiled Kord
Twin contacts on hookswitch and dial
Extended number plate

Plan now to put colored paystations to work for *you.* Send for new circular 1877 containing full ordering information.
Write: Automatic Electric Sales Corporation,
1033 W. Van Buren St., Chicago 7.
Or Call HAymarket 1-4300.

AUTOMATIC ELECTRIC

ORIGINATORS OF THE DIAL TELEPHONE

WASHINGTON NEWSLETTER

Tight Money Market

THE OBVIOUSLY SERIOUS effects of the present tight money market, and soaring interest costs, have been pointed up in two directions by the Bell System.

Just what kind of situation is facing telephone companies became clear when the New England Telephone & Telegraph Co. marketed an issue of $35,000,000 of 29-year debentures at an interest cost to maturity of 4.65%, highest for a Bell System company since early 1930.

Highest bid received by the New England company was 101.519 for debentures bearing a coupon rate of 4¾%. Record borrowing cost for a Bell System company was 5.32% in October, 1929, while another issue, sold in January, 1930, cost 5.22%.

Taking cognizance of the problem in a statement, the American Telephone & Telegraph Co. earlier had pointed out that earnings of Bell System must be high enough to attract large amounts of new capital in the face of high borrowing costs and the tight money market.

The Bell System will have to raise capital at the rate of $125,000,000 a month this year to finance its record $2.5 billion construction program.

AT&T commented that "Our growth comes from the demands of the American people and the fact that as a regulated industry we not only want to do but must do our utmost to give service when and where the customer wants it."

It pointed out that "Our earnings must be high enough to attract large amounts of new capital at today's higher cost of money . . . Not only is the cost of money higher but we are experiencing increased costs of construction and operation — including higher wage costs.

"All of these things add up to the fact that telephone earnings must be high enough to enable us to continue to attract large amounts of new and needed capital under prevailing conditions of tight money and high interest rates."

Service Demand Continues

THE TYPE of demands facing the industry, and the requirements placed on it, was brought to light by a government source, too — the Secretary of Commerce.

Commerce Secretary Sinclair Weeks, in a review based on a survey by the Business & Defense Service Administration's industry divisions, said that the 1957 construction program of the operating telephone and telegraph companies in the United States will be the largest ever undertaken by the industry, and is expected to approach the $3 billion mark.

Secretary Weeks said that the 1957 construction program will exceed by 19% the record 1956 program. He added that "The effect on this construction program will be reflected in an increase of production in the telecommunication equipment manufacturing industry and a continuing rise in the number of employes despite increased mechanization in both the operating and manufacturing fields."

Tax Relief Proposals

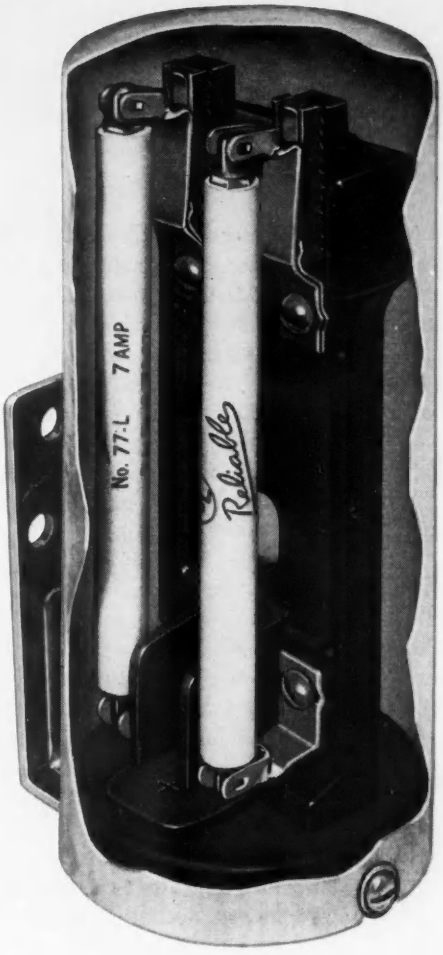
DESPITE the Eisenhower administration's determination to hold the line on tax reductions, and the presentation to Congress of the huge budget for the fiscal year beginning July 1, a couple of tax subjects still will be subjects of interest in the coming months.

All kinds of proposals are being offered for corporation income tax relief for small businesses, in what is one of the leading categories of bills introduced thus far in the new Congress by members of the House and Senate.

In general, they would cut back the rate on corporate income of less than $25,000. Some would also lower the tax rate on income of somewhat more than that figure, usually by imposing a graduated scale of corporation income tax rates similar to that on personal income.

Almost all of the measures — inescapably since it is usually agreed that there can be no tax reductions of any size this year — provide for "small" boosts in the income of larger corporations, or those making more money, to offset the loss in the lower brackets. One proposal with quite a bit of backing would raise the effective 52% rate on corporation income tax above $25,000 to 53%.

About the only thing which seems certain is that the corporation tax rate for large organizations will be no less than 52% in the coming year. Theoretically, it is scheduled to go back to 47% April 1, but about the



The flexible neoprene base has integral wire entrance sealing slots and, with its tapered design, closes the cover so snugly that it is truly weathertight and insect tight.

Station Protection–A New Design

Only the fuses and the discharge blocks remain unchanged–performance and dependability continues as before. There is a phenolic fuse mount, rather than porcelain–a flexible neoprene base with integral wire entrance sealing slots instead of open wire holes–a fuse mount and terminal post redesign that puts the wiring snugly in place without removing fuses–a fuse mount that can be easily reversed to wire from right or left. All metal parts are either bronze, aluminum or stainless steel.

Reliable's new Series 2000 Station Protector replaces the Series 1000 with design changes only–changes that are good for the Telephone Plant.

Reliable

RELIABLE ELECTRIC COMPANY CHICAGO

(Concluded from page 14)

only way that automatic reduction would take effect would be for the whole matter to get snarled up in a fight over small business.

Even less definite is what, if anything, is likely to happen about excise tax administrative and technical revisions. It seems like a cinch that there will be no reductions in the tax rates themselves, but reclassification or other technical changes could save some users some money, and could ease the job for those unwilling tax collectors, the nation's telephone companies.

It will be recalled that the House Ways & Means excise tax subcommittee offered several changes affecting communications excises in a report during the past session of Congress, later affirmed by the full Ways & Means Committee. The subcommittee then held hearings on excise subjects in November and December, and the result was a rather widely- distributed press conference by Chairman Aime Forand (D., R. I.) of the subcommittee on what had been done as a result of the hearings.

For reporters interested in the communications industry, the press conference was no howling success. The subcommittee report to the full committee said simply that the group had not completed its review of communications excises. Chairman Forand parried questions on the subject, in effect declaring that it might be a while before any decision on the subject is reached.

Indications were, however, that the subcommittee would recommend no substantial change in the previous communications tax proposal to the full committee.

The earlier recommendations would extend the exemption for installation charges to cover all communications services; redefine local telephone service to exclude all toll messages, rather than merely those for which a charge of over 24 cents is made; all toll messages would be included in the long-distance category; redefine teletypewriter exchange service; impose a tax on "wire mileage"; and remove interior communications systems from the tax on wire and equipment service.

Intercity TV Rates

FOR COMPANIES providing television services, or those who may be called to do so in the future, the FCC has come up with some interesting comments in a letter to Chairman Warren G. Magnuson (D., Wash.) of the Senate Interstate & Foreign Commerce Committee.

The letter was in response to Senator Magnuson's request for comments on the testimony of President J. W. Boler of the North Dakota Broadcasting Co. during the Senate Interstate & Foreign Commerce Committee's television hearings last year.

FCC Chairman George C. McConnaughey said that AT&T, "at the request of the Commission, has made a series of studies designed to show its investment, expenses, and return on investment attributable to the rendition of such service. Based upon our reviews and analyses of these studies and the level of earnings indicated thereby, we have concluded that we would not be warranted at this time in instituting formal action on our own motion looking toward downward adjustments in the overall level of rates applicable to the service.

"However, we are giving continuing consideration and study to the rates and rate structure involved, and we shall take appropriate action to effect such adjustments therein as our studies show to be desirable."

The Commission pointed out that it has a general rulemaking proceeding pending in the subject of intercity TV service, and that "The arguments advanced by Mr. Boler with respect to the alleged inequities and deficiencies of the existing rules and policies of the Commission and the deterrent effects thereof on the development of television service in the smaller communities of the nation have all been presented to the Commission by the pleadings filed by Mr. Boler and others in the proceeding.

"The Commission has not been unmindful of the various considerations raised by Mr. Boler and, accordingly, for some time past, has been granting applications filed by television broadcasters for authority to construct and operate their own radio relay systems in cases where common carrier facilities would have to be constructed in order to serve the broadcaster, and where it has been shown that the broadcaster can more quickly provide such facilities for himself.

"Such authorizations have been granted in cases involving nonavailability of common carried facilities . . ."

It was added that "As Mr. Boler states, the Commission's rules presently contemplate the authorization of such private systems only in cases where common carrier facilities are not available.

"In pursuance of this provision of the rules, the Commission's staff has customarily requested the applicants for private relay authorizations to furnish a statement from the common carrier operating in the area involved as to the availability or non-availability of common carrier facilities. However, under the present policy, failure to obtain such a statement does not preclude grant of an authorization."—*By the Editors of "Telecommunications Reports."*

FREE LITERATURE

This feature of "Telephone Engineer and Management" helps you get up-to-date technical bulletins, catalogs and literature. To obtain your copies write Reader's Service Department, 7720 N. Sheridan Rd., Chicago 26, Ill.

Anchors

NEW POCKET-SIZE brochure illustrating the latest nail anchor application methods is available from the Brush Nail Expansion Bolt Co. The brochure includes full technical data with proposed Federal Specification on safe working loads and lists the newest complete line of Brush Hammer Drive Anchors.

Contact Cleaning Tools

LITERATURE from P. K. Neuses, Inc., describes two types of contact burnishing tools, a pocket-type contact burnisher with replaceable blades, and spring tension gauges for determining setting or checking the tensions of relays and springs.

New Klein Catalog

MATHIAS KLEIN & SONS, 7200 McCormick Road, Chicago 45, Ill., has issued a completely revised catalog showing pliers and electricians' and linemen's tools and equipment. Included is a new feature that will be of special interest to plier users. Dimensions of each part of every plier — length of handles, of cutting knives, of nose, width of head, point, etc. — are given in detail. A copy of this catalog will be sent without charge to anyone interested.

Panel Meters

A SIX-PAGE panel meter bulletin (2057) has been released by Simpson Electric Co. This bulletin contains descriptions and specifications along with latest prices of the over eight hundred models. The bulletin illustrates meter styles, various types of meter movements, and dimensional drawings for meter mounting. Many typical Simpson meter scales are reproduced in actual size.

Additional information is also provided concerning Simpson's line of shunts and current transformers.

Power Derrick

J. H. HOLAN CORP. has just published a catalog on its new Series 6700 "bow-legged" Power Derrick. The 4-page catalog gives capacities and heights in various working positions; dimensions; action photos; and details on various operating features of the new derrick. The Series 6700 Power Derrick has an 8,000-pound capacity and can be used for handling poles up to 75 feet.

Reels, Wire & Cable

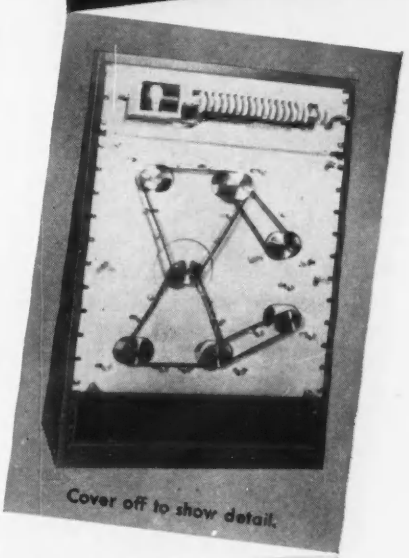
SUTTLE EQUIPMENT CO., Lawrenceville, Ill., has published an eight page catalog illustrating its complete line of wire and cable reels and measuring equipment. The catalog illustrates and describes: payout and takeup reels; squirrel cage reels; reel mounts; messenger strand despensers; storeroom reels; wire meters, and wire measuring wires.

Telephone Booths

SUTTLE EQUIPMENT CO., 135 S. La Salle St., Chicago, Ill., has published a four-page brochure giving complete data on: Unit-row booths; modular booths; commercial booths; "industri" booths; doorless booths; the "Handi-Booth," and booth accessories.

FROM
HOLTZER -CABOT

A Low-cost Multi-Frequency Ringing Panel with power savings up to $250 a year



Cover off to show detail.

This 25 watt five-frequency ringing panel can generate harmonic, synchromonic or decimonic ringing frequencies — *all at the same low cost.*

Permanent magnet-type generators are short-circuit-proof. Elimination of slip rings, brushes and/or commutators reduces maintenance costs. Constant clear tones. Low harmonic content eliminates cross ringing.

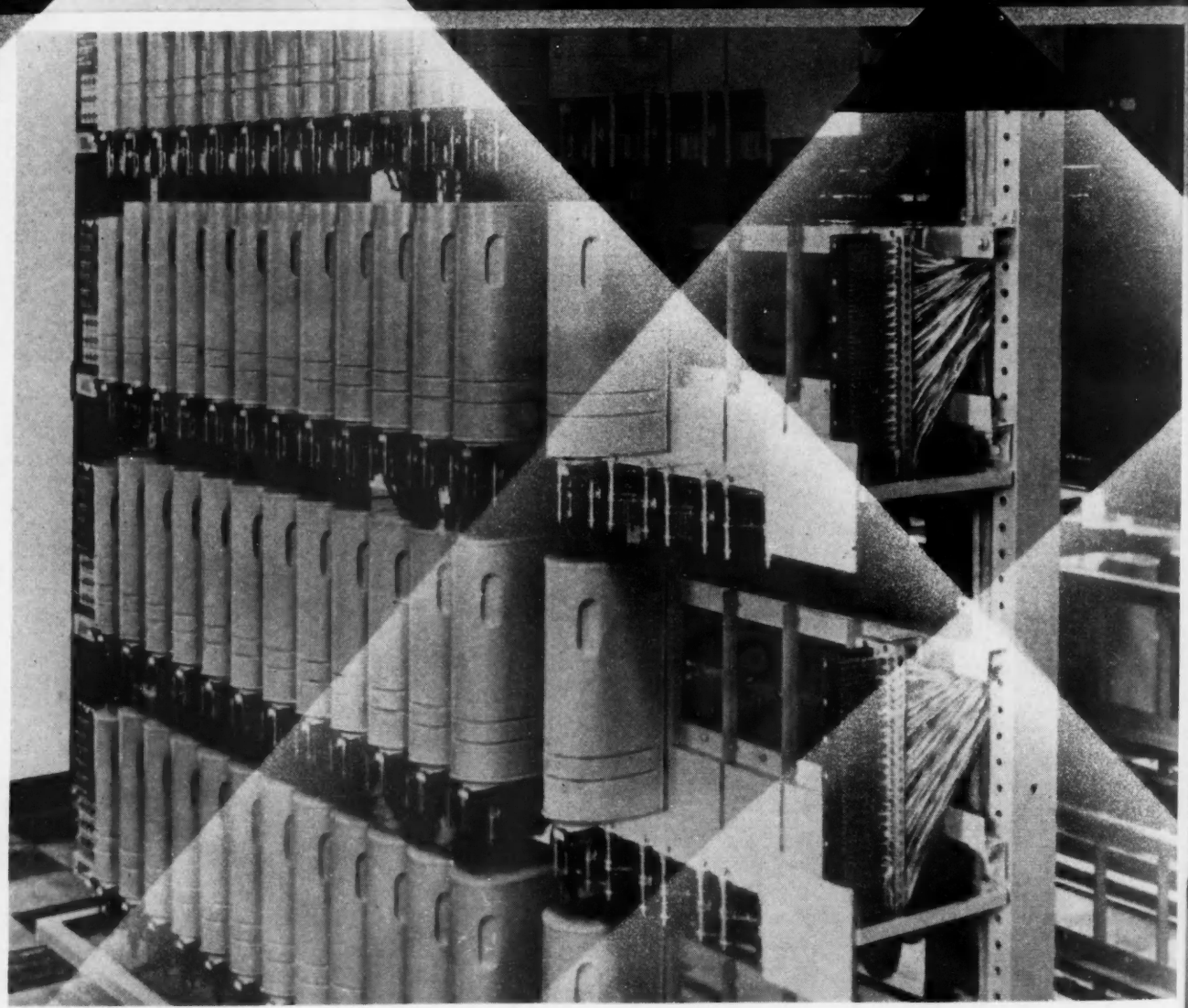
This compact unit is 21" high by 19" wide. Weighs approximately 120 lbs. (Also available in 23" or 30" panel width.) D.C. unit is governor controlled. Available with interrupter and tone alternator as optional equipment.

Order direct from Holtzer-Cabot or through the following telephone equipment manufacturers:

- Automatic Electric Company
- North Electric Company
- Kellogg Switchboard and Supply Company
- Stromberg-Carlson
- Leich Electric Company
- Federal Telephone and Radio

HOLTZER-CABOT TELEPHONE EQUIPMENT
Division of
NATIONAL PNEUMATIC CO., INC.
125 Amory Street, Boston 19, Mass.

WHERE STEP



FEDERAL STEP – BY – STEP
DISTRIBUTED EXCLUSIVELY BY KELLOGG

TO BUY

— by —

STEP

New Installations

Additions to present Equipment

Maintenance and Engineering

CHECK US FOR *Quick* DELIVERY

KELLOGG

A DIVISION OF I T & T

KELLOGG SWITCHBOARD AND SUPPLY COMPANY
A DIVISION OF INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION
SALES OFFICES: 79 West Monroe Street, Chicago 3, Illinois

KELLOGG BRANCH WAREHOUSES AND OFFICES:

6000 W. 51st Street
Chicago 38, Illinois
REliance 5-5445

4501 Truman Road
Kansas City 1, Missouri
RUmboldt 7085

23 Broderick Road
Burlingame, California
OXford 7-5780

410 N. Syndicate Ave.
St. Paul, Minnesota
Nestor 5878

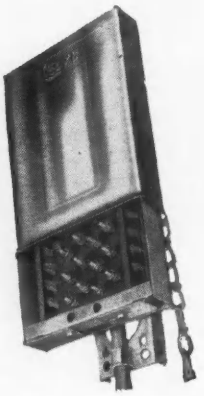
1515 Turtle Creek Blvd.
Dallas 2, Texas
RIverside 7-5191

1555 West Fourth Street
Mansfield, Ohio
Mansfield 7-2816

1594, Southland Circle, N. W., Atlanta, Georgia, Sycamore 4-2441

EXPORT DISTRIBUTOR:

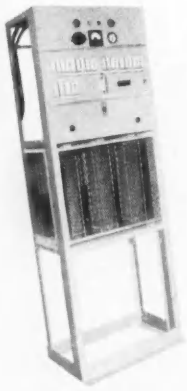
International Standard Electric Corp.
50 Church Street
New York 7, New York



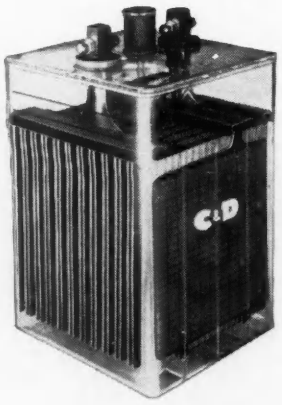
The Type XB Unprotected Cable Terminal features a Bakelite faceplate and insulating fanning strip molded in one piece, with Everdur studs positioned for easy wiring. Available in 6, 11, 16, and 26 pair size, with or without cable stub.
COOK ELECTRIC COMPANY.

Corrosion-Resistant Crapo Stainless Steel Cable Lashing Wire, Type 430, is available in .045", .065", and .061" diameters. Crapo Galvanized (C Coated) Steel Cable Lashing Wire is available in .091" and .061" diameters. Made by INDIANA STEEL & WIRE CO., INC.

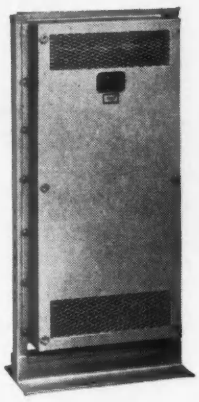
HERE ARE 8 "SURE



Air Compressor Dehydrator for supplying dry air to aerial and underground cables. Supplies up to 40 cables. Individual air flow indicators for each cable. Both automatic and manual units are available.
S & G MFG. CORPORATION.



Extra-Long Life!—The suspended and supported plate construction is an exclusive feature of C&D BATTERIES. Choose C&D PlastiCal (lead-calcium grid) for life expectancy of 25 years . . . for 14 years expectancy, specify PlastiCell (high tensile lead alloy grids). Made by C&D BATTERIES, INC.



S-5 Sub-Cycle for Synchromonic ringing. Generates 30, 42, 54, and 66 cycles, plus a fifth frequency. Ringing frequencies are locked to the A-C line frequency. Provides maintenance-free operation. Made by LORAIN PRODUCTS CORPORATION.

Preformed Dead-Ends for Self-supporting Plastic Cable. Both long and short dead-ends available. Easily applied without the use of special tools. Merely slip one leg through a standard hardware thimble clevis and wrap the legs around the cable. PREFORMED LINE PRODUCTS COMPANY.

Fuseless Protector with weathertight neoprene cover. Equipped with Reliable No. 504 Protector Units for station protection and Reliable No. 506 Protector Units for cable protection. Listed under UL re-examination service. Easy to install—simple to maintain—extra-long life. Made by RELIABLE ELECTRIC COMPANY.

TRICKS" FOR YOU

Kellogg's Standard Outside Plant Handbook now available at special price while quantities last. Reduced to $2.75 a copy, with ten or more copies priced at $2.50 each. Every phase of outside plant telephone pole line construction is covered in book.

Kellogg warehouses are well stocked and ready to give the prompt service you need. And because of Kellogg's 59 years of experience in the field, you are assured of getting the finest line supplies available.

KELLOGG
A DIVISION OF I T & T

KELLOGG SWITCHBOARD AND SUPPLY COMPANY
A Division of International Telephone and Telegraph Corporation
Sales Offices: 79 W. Monroe St., Chicago 3, Ill.
Telephone: DEarborn 2-0750

KELLOGG Branch Warehouses and Offices:

6000 W. 51st Street
Chicago 38, Illinois
REliance 5-5445

410 N. Syndicate Avenue
St. Paul 4, Minnesota
Nestor 5878

23 Broderick Road
Burlingame, California
OXford 7-5780

4501 Truman Road
Kansas City 1, Missouri
Humboldt 7085

1515 Turtle Creek Blvd.
Dallas 2, Texas
RIverside 7-5191

1555 West Fourth Street
Mansfield, Ohio
Mansfield 7-2816

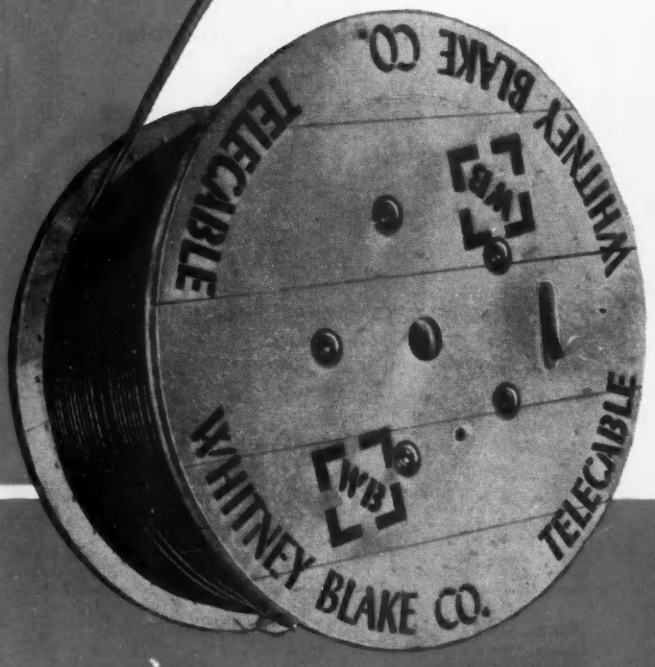
1594 Southland Circle, N.W.
Atlanta, Georgia
Sycamore 4-2441

Buy Right Now and . .

SAVE for YEARS

WITH WB

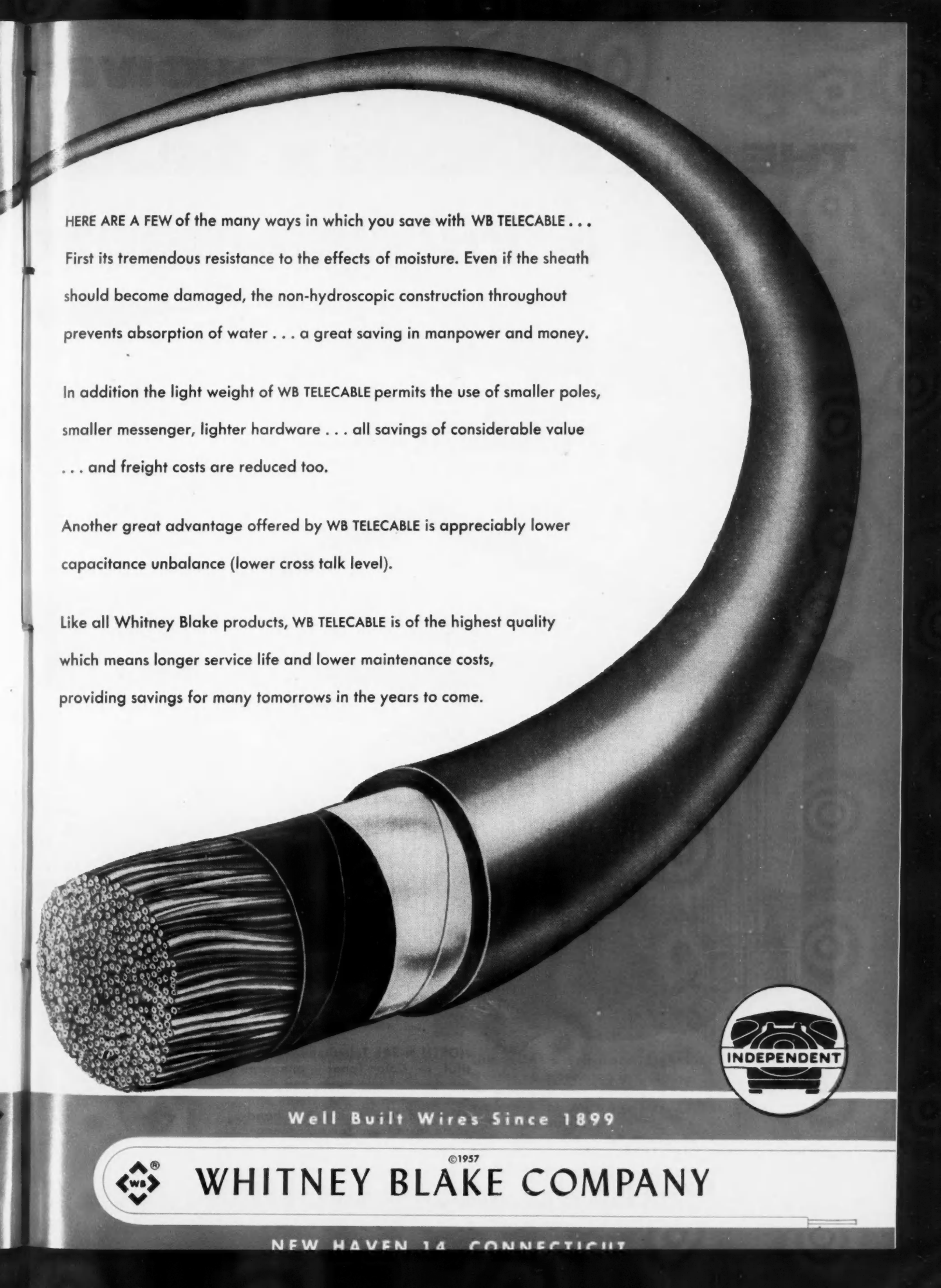
TELECABLE®



THE STANDARD FOR QUALITY AND SERVICE

WB

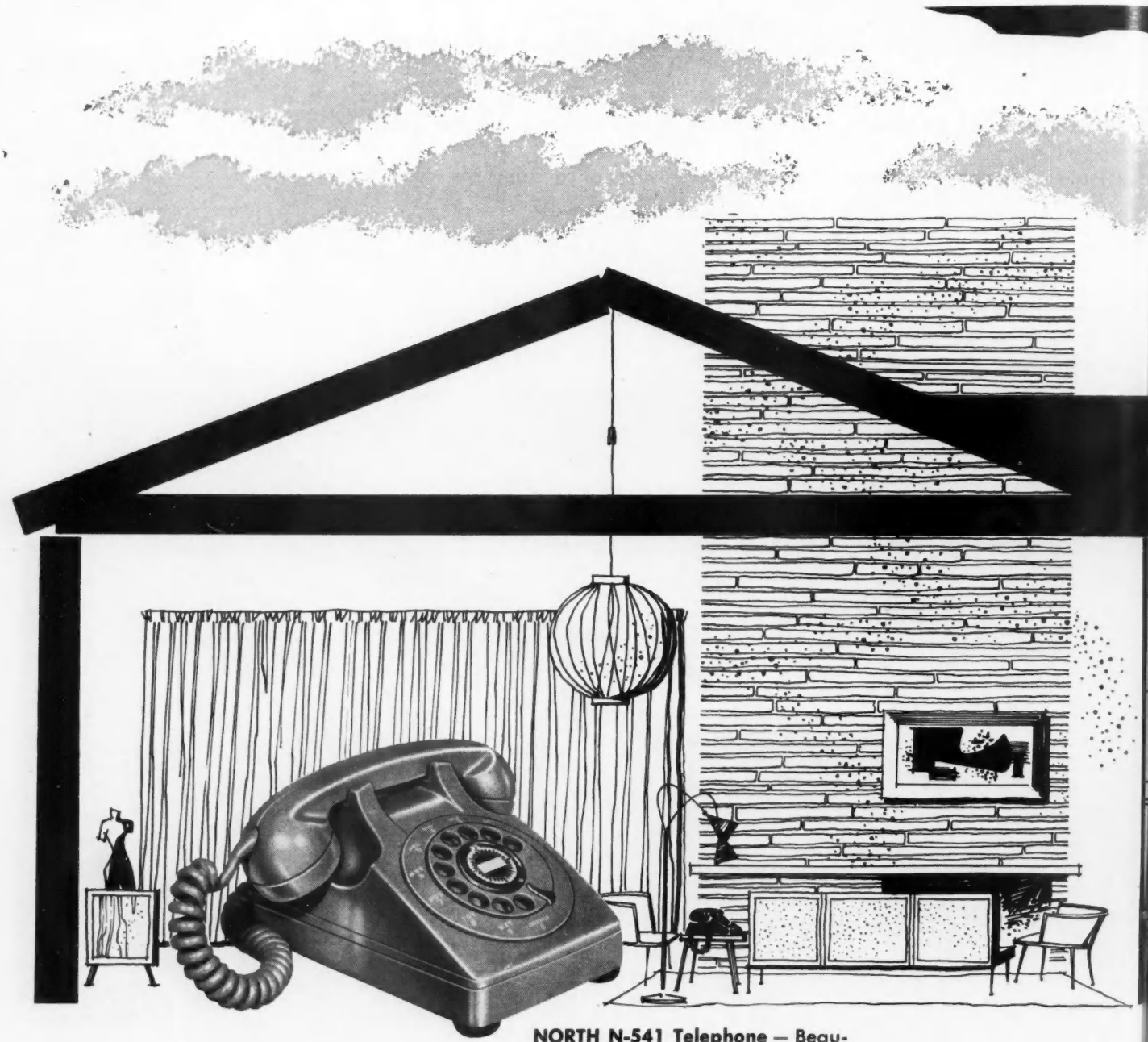
WB has that which others have yet to gain . . . EXPERIENCE


HERE ARE A FEW of the many ways in which you save with WB TELECABLE . . .
First its tremendous resistance to the effects of moisture. Even if the sheath should become damaged, the non-hydroscopic construction throughout prevents absorption of water . . . a great saving in manpower and money.
In addition the light weight of WB TELECABLE permits the use of smaller poles, smaller messenger, lighter hardware . . . all savings of considerable value . . . and freight costs are reduced too.
Another great advantage offered by WB TELECABLE is appreciably lower capacitance unbalance (lower cross talk level).
Like all Whitney Blake products, WB TELECABLE is of the highest quality which means longer service life and lower maintenance costs, providing savings for many tomorrows in the years to come.
INDEPENDENT
Well Built Wires Since 1899
©1957
WHITNEY BLAKE COMPANY
NEW HAVEN 14 CONNECTICUT

ONLY NORTH GIVES

THE COLOR-TONE N-541, THE

FOR A "PHONE-A-ROOM"



NORTH N-541 Telephone — Beautiful in Color-Tones — enhances the decor of any room, and decorating scheme! The clean simplicity of line makes it a handsome instrument for any room.

SY OU THE ERICOFON,

ICOLOR-TONE WALL PHONE

M EXTENSION PROMOTION!!!

The Independent Telephone Company can be successful in creating revenue-increasing extension business **only to the extent that it has something to offer!!**

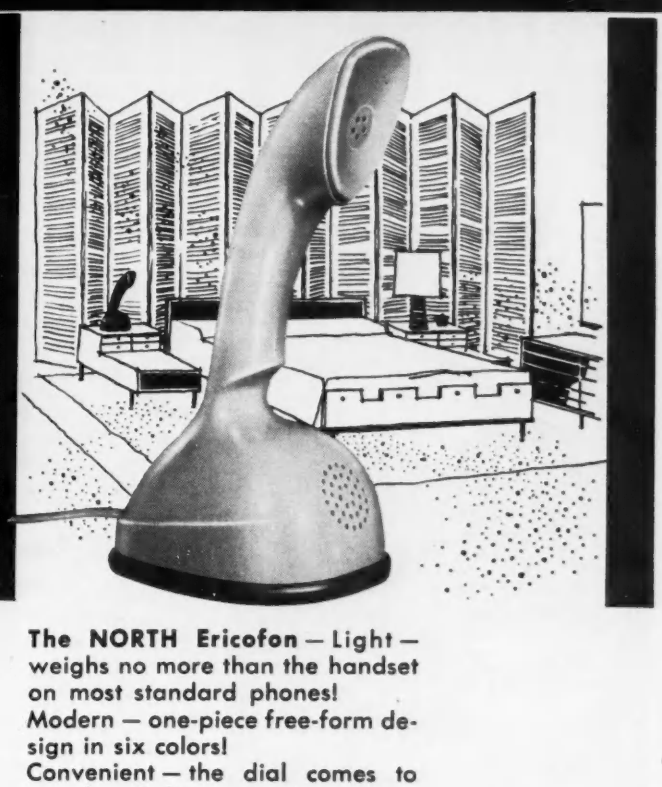
AND — when you offer your subscribers North Telephones — you are offering phones that are ideal for every room!!

The classic N-541 Color-Tone for living rooms!!
The Color-Tone Wall Phone for kitchens, dens, workrooms!!
AND, the Ericofon, for bedrooms, exclusively convenient for dialing (the dial comes to you in the one-piece Ericofon); exclusively modern in free-form design; and exclusively NORTH!!

NORTH ELECTRIC COMPANY

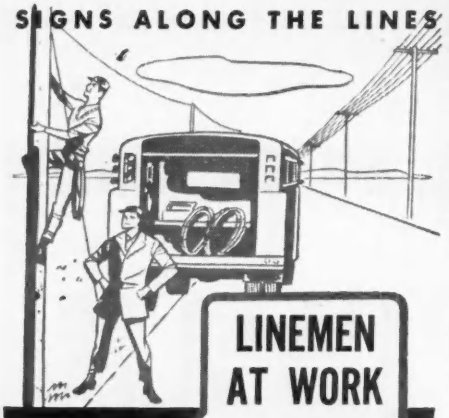
655 SOUTH MARKET STREET • GALION, OHIO

The NORTH Wall-Phone — Ideal for kitchen, den or workshop, the NORTH Wall Phone can be located out of reach of children, frees busy work space yet provides the convenience of a phone at hand! Choose from seven colors to brighten any area.



The NORTH Ericofon — Light — weighs no more than the handset on most standard phones!
Modern — one-piece free-form design in six colors!
Convenient — the dial comes to you for dialing ease in any position, any angle.

SIGNS ALONG THE LINES



LINEMEN AT WORK

USING Crapo GALVANIZED GUY & MESSENGER STRAND

Positive strength and durability economies, combined with the superior qualities of steel, make Crapo Galvanized Steel Strand a rugged performer. The heavy, ductile, tightly-adherent galvanized coating — applied by the famous Crapo Process — provides dependable protection for the steel, prolongs the expectant life of the strand. There is a size and grade of Crapo Galvanized Strand for every practical need.

INDIANA STEEL & WIRE COMPANY, INC.
Muncie, Indiana

V.I.P.

THE STURGIS 2200-G

with scuff-proof, noiseless, self-leveling fiber glass base

for all men in big jobs and big men in all jobs

Sturgis POSTURE CHAIRS

THE STURGIS POSTURE CHAIR COMPANY
Sturgis, Michigan

See your Sturgis dealer or write for literature to General Sales Offices, 154 E. Erie St., Chicago 11, Illinois

REVENUE BOOSTERS

THE SALE of extension telephones will be aided during the coming year by Indiana Bell advertising which will feature the "Phone-zone" — a new phrase offering the key to better living through greater telephone convenience.

Newspaper advertisements at the start will include illustrations to describe the "Phone-Zone" idea at a glance. The

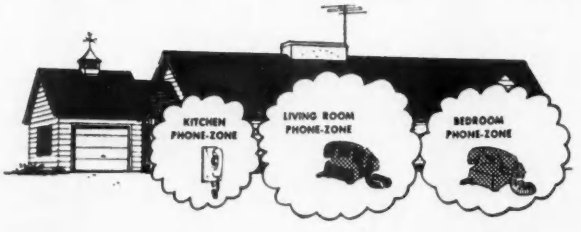
ads will inform customers that, "A 'phone-zone' is an area in which you can *conveniently* hear and answer your telephone, or make outgoing calls easily and quickly."

These first ads also will point out, "Every living zone in the home should have a handy telephone. You'll find you can take life easier, relax more and, at the same time, accomplish more of the things you want to do." In succeeding ads, "life" situations will be used to illustrate the convenience of extension telephones and the "Phone-Zone" theme will be included as a continuing but secondary element.

Indiana Bell's goal for 1957 is a net gain of 25,000 extension telephones. To reach this goal will require the personal, enthusiastic salesmanship of every telephone man and woman, backed up by a comprehensive advertising program, carried on by the Public Relations Department.

The new "Phone-Zone" theme to be used in newspapers, window displays, bill inserts and all other forms of advertising offers one important reason in answer to the question, "Why do we advertise?" Any service representative or installer who sells a customer a couple of extension telephones, knows there is plenty of competition for the customer's dollar.

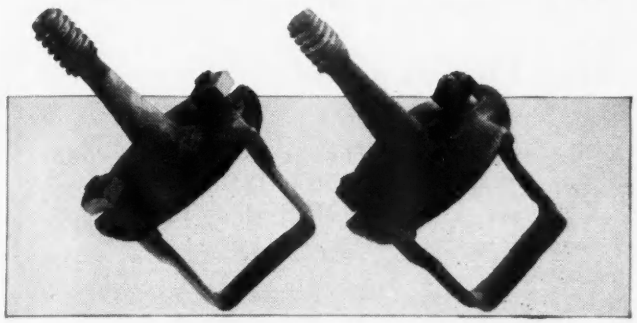
Of course there are a lot of these dollars available, because family incomes have been rising, particularly in recent years. People have more dollars to buy the things they want most.



They are getting plenty of help in deciding what to buy.

Since the consumer has the money to spend as he sees fit the question is, can we induce him to spend some of it on the additional telephone service he needs?

Cor-Ten® steel hardware eliminates costly replacement trips



Many utility companies make a practice of replacing all hardware on a pole even when only a few pieces are actually in need of replacement. They do this to eliminate costly return trips* to the same pole to replace the balance of the hardware as it wears out. Although this might seem wasteful, it proved to be the least costly method of handling the situation—until recently.

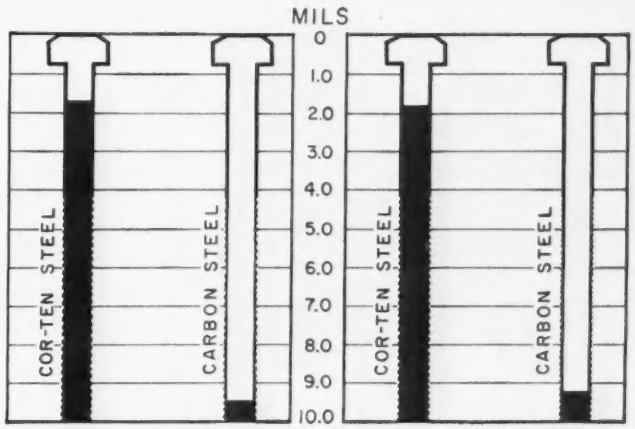
**The average utility pole mounts between fifteen and twenty pieces of hardware. Here's what happens when one or more pieces of hardware corrode beyond further use: A minimum crew of one lineman and helper proceeds to the trouble spot (average travel time ½ hour). Tools and equipment are unloaded from the truck (average unloading and reloading time ½ hour). The lineman must take certain safety precautions if the line is to be worked "hot" (average time for safety measures 15 minutes).* Then *the lineman starts to work replacing the corroded hardware. Time elapsed: 1¼ hours* each *for two men* plus *time consumed actually replacing the hardware. This does not include cost of the vehicle, its maintenance, equipment costs, etc.*

Today, manufacturers of pole line hardware—particularly that hardware which is to be used in industrial and marine atmospheres—are turning to a stronger, more corrosion-resistant metal—USS Cor-Ten High-Strength Low-Alloy steel.

Utility companies can now set a pressure-creosoted pole, install Cor-Ten steel pole line hardware, and expect the same amount of service life from *both pole and hardware.* By eliminating one, two, and even more repair trips to the pole, savings, both in time and equipment, are impressive. Multiply those single-pole savings by the total of all poles erected annually by your company. The result should leave no doubt about the economy of using Cor-Ten steel pole line hardware.

Compared to carbon steel, Cor-Ten steel hardware is normally furnished with a zinc coating that gives it initial added protection when the hardware is first installed. The true advantage of Cor-Ten steel becomes evident after the zinc coating is gone. At that point, Cor-Ten steel forms a smooth, tightly adhering coat of oxidation that keeps moisture from penetrating and thus slows down further corrosion. This difference in rate of corrosion is illustrated by the graphs in this column showing corrosion loss after 3.5 years of exposure in marine and industrial atmospheres. Naturally, the more corrosive the atmosphere, the more accelerated will be the rate of corrosion. But even in the extremely corrosive conditions found near the sea and around industrial areas, Cor-Ten steel hardware can be expected to last the life of a treated pole, while carbon steel hardware normally requires replacement twice during the life of a pole.

The second important advantage of Cor-Ten steel—its greater strength—means that even if Cor-Ten steel hardware corroded as rapidly as carbon steel (which it does *not*), hardware made from Cor-Ten steel would still stay on the job, safely resisting



WHITE AREA REPRESENTS CORROSION LOSS IN MILS; BLACK AREA REPRESENTS SOLID METAL.

FIGURE 1: Comparative corrosion loss in mils of USS Cor-Ten Steel and structural carbon steel exposed for 3.5 years in *marine* atmosphere at Kure Beach, N. C.

FIGURE 2: Comparative corrosion loss in mils of USS Cor-Ten Steel and structural carbon steel exposed for 3.5 years in *industrial* atmosphere at Kearny, N. J.

stresses long after carbon steel hardware was ready for the scrap pile. In other words, you can expect your Cor-Ten steel hardware to last at least 50% longer than hardware made from carbon steel.

USS Cor-Ten steel has been out-performing carbon steel on hundreds of applications all over the world for the past twenty years. Its superior strength and corrosion-resistant qualities are not just drawing-board theory but time-proven, budget-cutting fact. You'll find the whole story in a booklet called "USS Cor-Ten Steel Pole Line Hardware." Write for a copy to United States Steel, Room 2801, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

2 NEW PRODUCTS in the KLEIN LINE

These new high-quality tools have been added to the Klein line.

A Pump Plier that gives easy one-hand operation and a firm grip in any of four positions.

And the new Klein Adjustable Wrenches of drop-forged alloy steel, light in weight, chrome plated for lasting protection and service.

Write for Bulletin

Bulletin No. 1157 on these two Klein tools is now available. Send for your copy.

Mathias KLEIN & Sons
Established 1857 — Chicago, Ill., U.S.A.
7200 McCORMICK ROAD • CHICAGO 45, ILLINOIS

SAFETY CORNER

The Time Factor

IT WAS raining as the delivery truck came around the curve. It skidded on the wet, slippery road and rammed a car coming in the opposite direction, injuring the other driver and his two passengers.

The foreman in making out the accident report asked the usual questions and was informed by the truck driver, "Sure, I might have avoided the accident if I had driven slowly, kept to the extreme right around the curve, etc., but if I drove like that all day long, it would be impossible for me to get my scheduled work done."

How much time did the driver lose when his truck skidded off the road on the wet curve? Well, he had to call his office and report the accident. then the truck had to be towed away, and it was laid up for three days in the repair shop. If the driver has to appear in court, it's still more lost time from the job, then there were reports to be made up, etc. You'll agree that the time lost was considerable.

How much time would it have taken for the driver to have rounded the curve slow enough so that his truck would not have skidded?

Suppose the dangerous part of the curve is 300 feet long, that a safe speed is 15 MPH and an unsafe speed 30 MPH:

To drive 300 ft. at 15 MPH takes — 13.6 seconds.

To drive 300 ft. at 30 MPH takes — 6.8 seconds.

Difference — To drive the curve at 15 MPH (safely) — 6.8 seconds.

Time it takes to slow down from 30 to 15, and then return to 30 MPH takes—11.2 seconds.

Total extra time to drive curve safely — 18.0 seconds.

It looks as though the driver gambled his neck, his truck and the safety of others trying to gain just 18 seconds.

"But — We'll never get anywhere if we slow down for every corner and curve."

OK, suppose there were 16 other sharp curves or obscure intersections on his 30 mile trip, requiring him to slow down to be safe.

Total time required to be safe — 16 x 19 sec. = 4.8 minutes.

It's often a mistake to believe that you'll get there quicker by driving faster. It isn't always true, what with traffic lights, traffic jams, etc.

The amount of time you think you save is largely an illusion.

For Example:

A ten mile trip at 50 miles per hour takes 12 minutes —

The same trip at 60 miles per hour takes 10 minutes —

Only 2 minutes saved. Even at 80 miles per hour, only 4½ minutes are saved over the 50 mile per hour speed.

Remember, the faster you drive, the less time you have to get out of any dangerous situation, and at real fast speeds, you no longer control the car — You just aim at it.—*New Jersey Bell.*

INDEPENDENT TELEPHONES

HELP YOU REACH ALL AMERICA

America's gold coast. Rich with timber, oil, produce, fish. Modern settlers are still arriving. Getting to work planting, mining, building. More homes needed. More cars. More telephones. More lines to carry the voices of our booming west.

In every part of America, Independent telephone companies match the pace of progress. 4,700 of them now provide dependable low-cost telephone service to *two-thirds of the entire area of the nation.*

INDEPENDENT TELEPHONE COMPANIES of America

United States Independent Telephone Association
Pennsylvania Building • Washington, D. C.

Standard one-position sections are available for Stromberg-Carlson No. 3 type board, to permit easy expansion at least investment. This board has many other design advantages, including individually removable jack sleeves, keysender operation, provision for operator toll dialing.

This toll board grows a little at a time

. . . to save you money!

Toll business continues its merry dance upward.

That's fine. Your earnings continue to grow, too.

But how do you plan for the future? Buy a toll switchboard larger than you need today? Or a smaller board, and add positions when you need them?

We recommend the latter, because it prevents tying up your money on equipment you're not using.

And we recommend the Stromberg-Carlson No. 3 toll board, because you can expand it *one position at a time*, continuing to give your subscribers the finest toll service while paying only for equipment that you are currently using.

This is just one of the many financial reasons for buying a Stromberg-Carlson No. 3 switchboard. For details on maintenance economy, faster operation, etc., call your Stromberg-Carlson office.

STROMBERG-CARLSON COMPANY

A DIVISION OF GENERAL DYNAMICS CORPORATION

Sales Offices: Atlanta 6, Chicago 6, Kansas City 8, Rochester 3, San Francisco

EDITORIAL

"Three Dimensional Engineers

ON JANUARY 21 a veteran telephone man Frederick R. Kappel, president of the American Telephone and Telegraph Company, addressed the Winter General Meeting of the American Institute of Electrical Engineers (AIEE) and made a few comments and observations about engineers and engineering that we believe deserve close study by all telephone industry members.

"In my judgment," President Kappel said, "There is simply no room left for any routine approaches to engineering, or for standing still with the mental equipment we've got. The engineer has to grow and change with the times, and constantly equip himself to handle new problems. He has to nourish his mind and broaden his outlook to make sure that neither gets obsolete. And at all times, he has to look ahead.

"Obviously we need the most in creative imagination, ability to take on new assignments and selective judgment. I think the growing tendency in the schools to concentrate on fundamentals is very helpful to this, because the first need is to develop the basic mental equipment. There remains to industry the great responsibility to provide not only first-rate technical training but also to make sure the able engineer never gets locked in his technical closet."

The need for the telephone industry's attention to such responsibilities is found in these words:

"Over the next 10 *years," he said, "we foresee that* 80,000 *Bell System people — engineers included — will be moving into new positions in management. In the same* 10 *years we shall be going a long, long way in the transformation of our physical telephone system. New art and applications will bring new convenience in service and new forms of service.*

"In fact we expect the time is coming when we'll be able to communicate anything you want in just about any way you want and over any distance, long or short.

"With people changing, management changing, technology changing and service changing, it is unpredictable not to use every means in our power to improve our competence and at the same time our understanding of the world around us and our place in it . . . ."

For all industry, Mr. Kappel suggested that now is the time for intelligent and concerted effort to develop what he called "*three dimensional engineering*," and defined as follows:

"The first dimension is what you got in college, that showed you how to move in a straight line in your particular field.

"The second dimension is in continued training and self-study that broadens a man — or a woman — and keeps him up-to-date with technological changes so he can solve problems in broad new areas of engineering.

"The third dimension is the height that comes from the mixing and mingling of engineering and management ideas, so that the engineer's understanding of the problem and requirements OF the business make him more effective IN the business. This understanding comes not only from study but from shoulder-to-shoulder association and contact and interaction between engineering, operating, financial and merchandising people. And we need this third dimension not here and there among engineers but everywhere — so they will have a volume effect on the business. If engineering is to be solid, it's got to have this volume . . ."

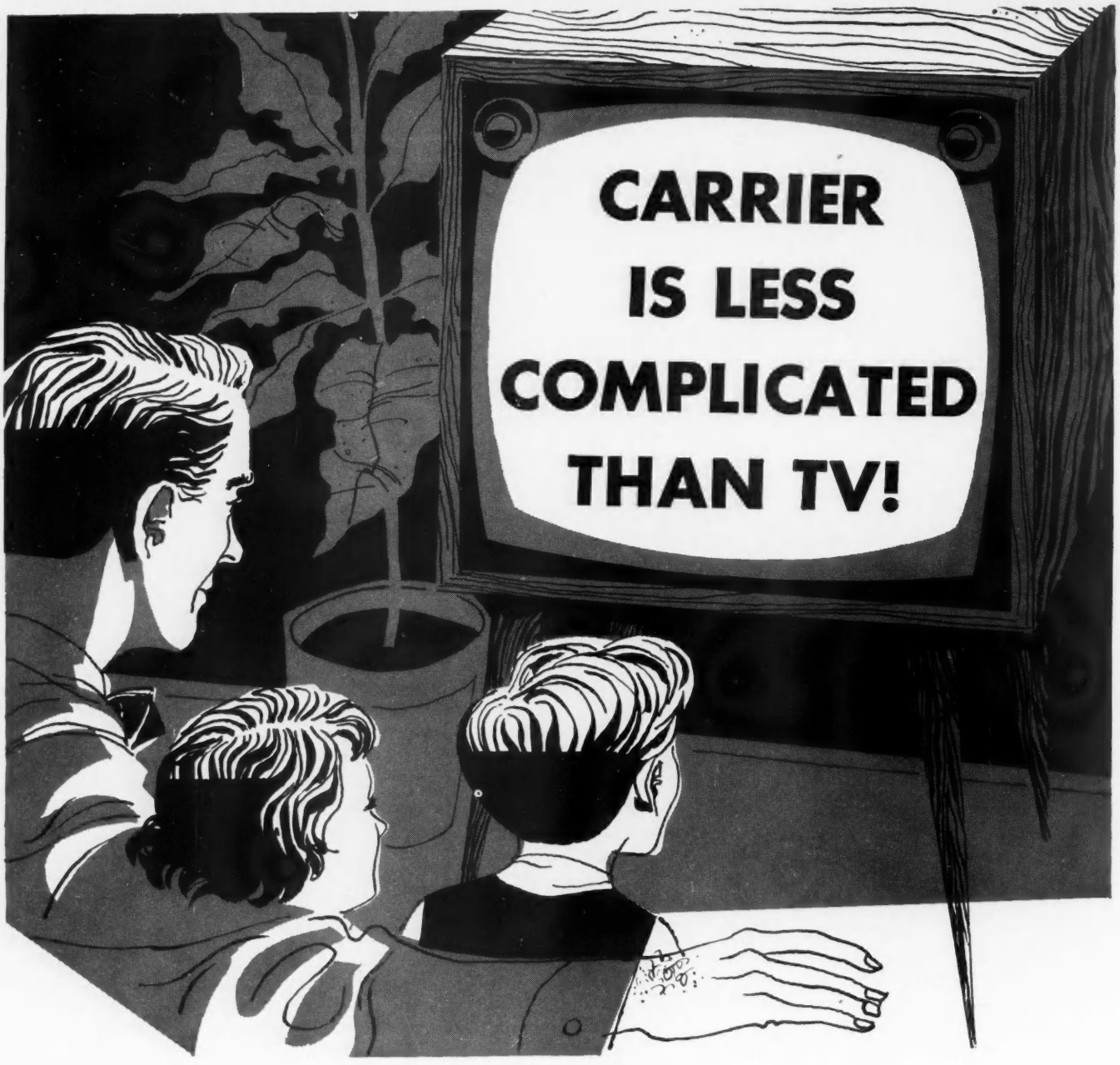
As we see it industry can contribute much to such developments, especially to the second and third dimensions.

Right now in the telephone business many companies, because of the effort they are making in these directions, are getting a wonderful amount of fine engineering work done that otherwise could never have been done so soon or so well.

More than that, with a wider appreciation by other people in management of the engineer's contribution, we feel the industry is getting a better team and a better overall job.

And this is all to the good. For as Mr. Kappel said — *". . . as the need for technology increases — and it surely will — it seems inevitable that the need for engineers in management including top management will likewise continue to increase. . . . What this means is simply that engineers must grow and of course it is they themselves who must do the growing. No one else can do it for them. The training and education are essential . . . . but what they add up to in the end is only the soil to grow in . . . ."*

(The foregoing editorial, although copyrighted, may be reprinted in whole or in part without charge, provided credit is given this publication and a copy of such reproduction is filed with this publication. This legend need not appear on the publication.)



Millions of people enjoy television without understanding its installation and maintenance.

Perhaps you have been putting off the use of carrier because you consider it too complex, too difficult to understand, maintain, and operate. *A Lenkurt Carrier System* will soon change your mind. It is engineered to your requirements and comes to you factory-assembled, rack-mounted, and tested as a system. Installation is quick and easy, and in a matter of minutes it's "all set to go" . . . not as complicated to maintain as the television set in your home. And your worries about adequate circuits are over.

Many companies with *no* carrier experience have found it surprisingly simple and easy to add new circuits with Lenkurt Type 33A carrier equipment. This system has proven itself the least expensive, least complicated, and fastest way to add new channels. Type 33A often proves in at distances as short as 7 miles. You can start with a single channel, if you like, add a second, then a third—up to a total of six channels on a phantom group.

If you would like to know more about a Lenkurt Carrier System—and our "Package Plan" service—write to Automatic Electric Sales Corporation, 1033 West Van Buren Street (HAymarket 1-4300), Chicago 7, Illinois. In Canada: Automatic Electric Sales (Canada) Ltd., Toronto. *Offices in principal cities.*

AUTOMATIC ELECTRIC

GENERAL SYSTEM

INDEPENDENT

Originators of the dial telephone • Pioneers in automatic control

The independent company

direct distance dialing

By L. A. HODSON

In Part V of his article on Direct Distance Dialing, Mr. Hodson discusses routing requirements. Part IV of this article appeared in the November 1, 1956 issue. Part VI is scheduled for the March 1 issue of "Telephone Engineer & Management."

UNDER conditions of manual ring down toll operation a particular telephone, connected to a dial central office, could be identified by the name of the city in which it was located, followed by a number of digits, or corresponding letters, determined by the number of telephones in its local dialing area, for example:—

Easton 24
Westville 2345
North City 23456
Metropolis BUtler 2-2200

To make the connection to the required number, say Westville 2345, the operator at the originating toll center — 'A' would consult her routing file and ascertain the routing to be via Jefferson City, Monroe and Jackson, Jackson being the terminating toll center. To set up the connection she would plug into a trunk to Jefferson City and ask for Monroe. She would then ask Monroe for Jackson and, on being connected to the Jackson operator, would pass forward the required number, Westville 2345.

From another originating toll center 'B', located in a different part of the country, the routing file would give the routing to be via Dartmouth, Rutgers, Brown and Jackson. The operator at 'B' would set up the connection in the same manner as the operator at 'A' but using this different route. The two connections are shown in *Fig.* 1.

The next stage in the development of toll operation was the introduction of operator toll dialing, which enabled the operator at the originating toll center to set up the call without the assistance of intermediate operators, by dialing routing digits which would cause automatic switching equipment in the intermediate switching points to make the connections previously set up by the intermediate operators. The switching equipment was normally of the step by step pattern, without translation facilities, so that the digits dialed by the originating operator had to correspond to the predetermined routing path to be followed. Under these circumstances the operator at toll center 'A' would find the routing to Westville to be:—*Jefferson City* 24 + 457 + 8 + (*required number*).

This means that dialing 24 over a trunk to Jefferson City causes connection to be made to a trunk to Monroe. Dialing 457 over the trunk to Monroe causes connection to be made to a trunk to Jackson. Dialing 8 over the trunk to Jackson causes connection to be made to a trunk to Westville. Dialing the required number over the trunk to Westville causes connection to be made to the required telephone.

The operator at toll center 'B' would find the routing to Westville to be:—*Dartmouth* 7 + 35 + 024 + 8 + (*required number*).

This means that dialing 7 over a trunk to Dartmouth causes connection to be made to a trunk to Rutgers. Dialing 35 over the trunk to Rutgers causes connection to be made to a trunk to Brown. Dialing 024 over the trunk to Brown causes connection to be made to a trunk to Jackson. Dialing 8 over the trunk to Jackson causes connection to be made to a trunk to Westville. Dialing the required number over the trunk to Westville causes connection to be made to the required telephone.

These connections are illustrated in *Fig.* 2.

There are approximately 2600 toll

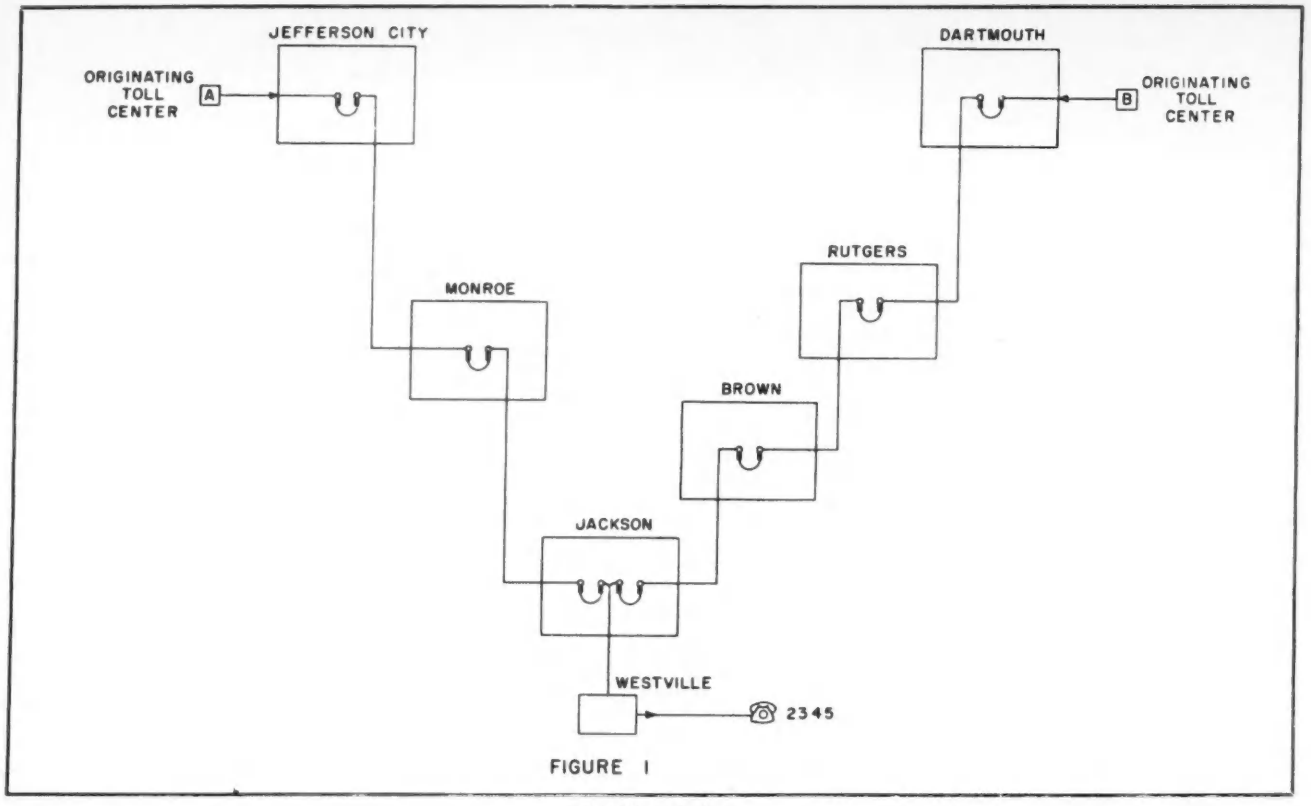


FIGURE ONE.

centers in the country, serving more than 20,000 end offices. Nationwide operator toll dialing, using the system of routing described above, would require every toll center operator to have immediate access, either directly from a visual index file or bulletin board on her position, or indirectly from a rate and route operator, to information as to the routings from her toll center office to every other toll center office in the country, and to information as to the terminating toll center for every one of the more than 20,000 end offices. This would involve the compilation and continual maintenance of 2600 different routing files, which would be a massive, costly, and laborious task.

To supply this information to 56,000,000 subscribers and keep it up to date would be manifestly impracticable. On the other hand simplifying the routing problem by connecting every toll center to every other toll center would be even more impracticable. Routings must still be determined by economic considerations, that is, by the need to employ the minimum investment in toll line plant and toll switching equipment to complete each call.

It is evident that to make subscribers dialing of toll calls (direct distance dialing) practicable, a system is required which, from the telephone number of the required station (which is all the information the calling subscriber can be expected to know or can economically be given) will make the connection to any other telephone in this country or Canada, rapidly and via the most economical routing.

This requirement is met by the A. T. & T. Company's nationwide toll dialing plan. The prime aspects of the plan which are concerned with routing are:— (1) The national numbering plan; (2) the general toll switching plan; (3) automatic alternative routing; (4) the system of limited transmission losses.

The National Numbering Plan

TO LIMIT the complexities and promote the efficiency of the equipment which determines the correct routing from the called number, it is desirable that the information put into the machine should always be in the same form, and that the individual pieces of information which the machine requires to do its job should always be in the same place within that form. The information can only be put into the machine by the subscriber's dial which, whilst it displays both letters and numbers on the dial plate, actually sends only digits, and it must be in a form which can easily be remembered

The old style telephone numbers, such as — *Easton* 24 — *digital equivalent* 32786624 *or North City* 23456 —*digital equivalent* 66784248923456, are obviously unsuitable, as there is no indication implicit in them as to which digits identify the central office and which digits identify the required station in that office. Furthermore many cities have the same name and there is no indication in the number as to which of, for example, the many "North Cities" is the one actually required.

It was decided, therefore, to base the numbering plan on the "2 letters — 5 digits" scheme used successfully for many years in the large metropolitan areas. In this scheme the first two letters of the exchange name and the first digit identify the central office; the last four digits identify the station in that office. Using an exchange name helps the subscriber to remember the whole number. Such a system will, in theory, give an individual identity number to every main station in a thousand central offices, each serving ten thousand main stations. Such a numbering plan would not, however, serve the whole country, so the country was divided into "numbering plan areas" each identified by an individual three digit number, the stations within each area being identified by the individ-

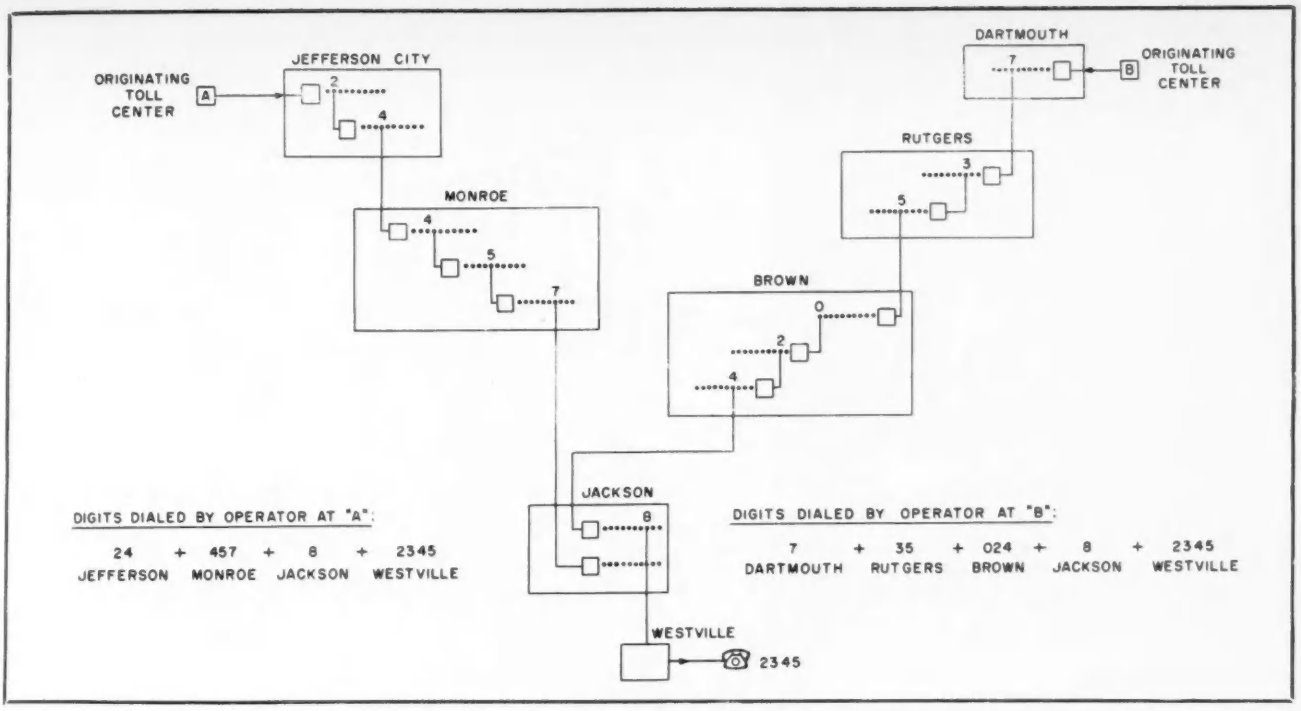


FIGURE TWO.

ual 2 letters + 5 digits numbers already described.

The result of this concept was the nationwide numbering plan in which every main station throughout this country and Canada has a different ten digit number. The first three digits, which are in the form X X′ X″ identify the numbering plan area in which the station is located.

X is any digit from 2 *to* 9

X′ is 0 *or* 1

X″ is any digit from 0 *to* 9 *when X′ is* 0

X″ is any digit from 0 *to* 9 *except* 1, *when X′ is* 1

The purpose of having the middle digit of the area code always either 1 or 0 is to enable the routing equipment to distinguish between the three digits indicating the area code, and the three digits indicating the office code. No two numbering plan areas in this country or Canada have the same area code. The areas which have so far been established are shown in *Fig.* 3.

It will be seen that in the less densely populated areas the area boundaries generally coincide with the state boundaries, whereas the more populous states contain two or more numbering plan areas. In subdivided states the numbering plan area boundaries were arranged as far as possible to avoid cutting across heavy toll traffic routes in order that as much toll traffic as possible should terminate in the area in which it originates. Of the 152 possible code combinations in the form of X X′ X″, 108 have been assigned to date.

The second three digits of the number, which are in the form L L N, identify the central office, within the previously determined numbering plan area, to which the station is connected.

L is any letter from the following list.

Letter	Corresponding Digit
ABC	2
DEF	3
GHI	4
JKL	5
MNO	6
PRS	7
TUV	8
WXY	9

N is any digit from 0 to 9

A typical central office designation is thus OLympic -3. To reach this office the subscriber would dial OL3 and the equipment would receive the digits 653. It will be seen that, as there are no letters corresponding to digits 1 and 0 on the dial, 1 and 0 will never appear in either the first or second place in the central office code. 1 is avoided in the first place because in some offices the local dial equipment is arranged to ignore an initial digit 1 and digits 11 are often used to gain access to special services, such as 112, 113 etc. 0 is avoided in the first place because in most offices 0 is user to reach the operator. 1 and 0 are avoided in the second place in the office codes because the presence of a 1 or an 0 in the second place is used to identify a code as an area code.

The number of possible office codes is thus 640 (8 × 8 × 10) but in practice only about 500 are usable because of the difficulty in finding suitable names with initial letters corresponding to certain first and second digit combinations, such as 55, 57, 95 and 97. These unusable combinations are reserved for radiotelephone use. Furthermore codes with the last digit 0, such as 650, are being reserved as much as possible for 'terminating toll center' codes to give access to service operators, in order to avoid possible confusion with the letter O, by subscribers.

Office codes, in digital form, are assigned by the local Bell System Company in consultation with the Independent Company concerned, to be compatible with economical intertoll trunking arrangements at the toll centers and with economical extended area service trunking arrangements in the end offices. Office names are chosen, by the Independent Company, from a list of suitable names, which can be obtained from the local Bell System Company. These names bear no relationship to the name of the town in which the office is located, but are designed to reduce the variety of names in use and thereby reduce the possibility of misrouting due to

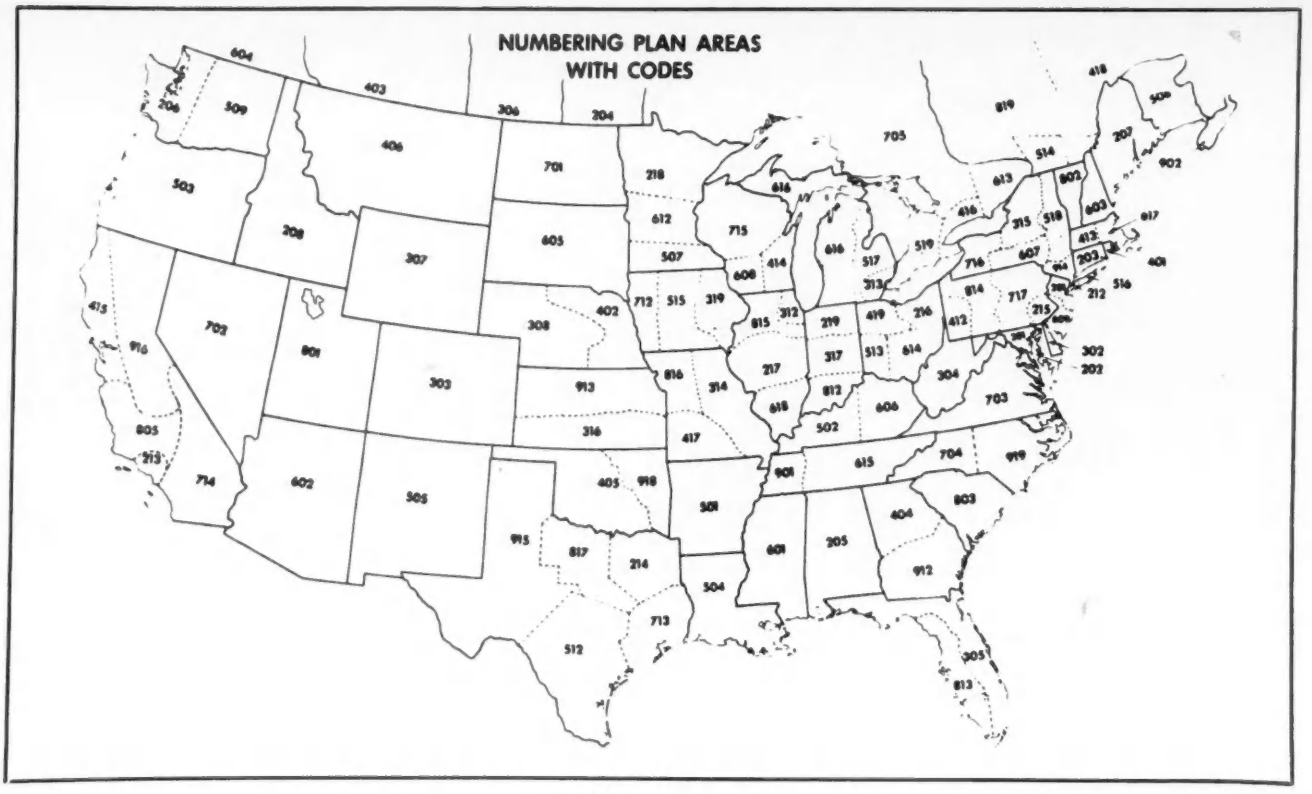


FIGURE THREE

errors in spelling. A typical old style telephone number, such as North City 23456, would thus become, when converted to 2-5 numbering for compatibility with the nationwide toll dialing plan, a number such as — North City — BUtler 2-3456. (Additional information on the requirements for making central offices compatible with nationwide toll dialing is given in a previous series of articles entitled "The Independent Telephone Company and Nationwide Toll Dialing" which is now available as a brochure.)

No two ofices in the same numbering plan area have the same office code, so that the combination of the three digit area code and the three digit office code, in the form 216 — OLympic 3, strictly identifies only one central office in the United States and Canada.

The last four digits of the number, in the form N N N N, identify the station in the previously determined central office. N is any digit from 0 to 9. In terminal per line offices the first three of these digits indicates the connector terminal to which connection should be made and the last digit indicates the ringing frequency or code to be used.

In terminal per station offices the four digits indicate the connector terminal.

The complete number is thus in the form:—

216 — Area Code
OL3 — Office Code) Listed directory number, which also ap-
2345 — Station Number) pears on the station dial label.

To reach a station in a numbering plan area other than that from which the call originates (foreign area dialing) it is necessary to dial all ten digits. To reach a station in the same numbering plan area it is necessary to dial only the last seven digits, that is, the station's listed directory number. To reach a station in the same central office as that from which the call originates it may only be necessary to dial the last four digits. In multi-office areas it may be necessary to dial the last five, or the last seven, digits, depending on the number of offices in the local dialing area, the proximity to a metropolitan area in which the entire 2-5 number is dialed, the extent to which the local service is used by transients used to dialing the full 2-5 number, and other considerations. Whatever the local requirement, provision should be made to allow at least a limited number of calls to be dialed using the full 2-5 number, to take care of transients. This can be accomplished by the use of a "run around" train or digit absorbing selectors.—*To be Continued in the March 1 issue.*

Book Review

A FOURTH edition of "Reference Data for Radio Engineers" has been released. In it, the contents of the previous volume were brought up to date, expanded where developments required further treatment, and new material added.

As indicated by its title, it is primarily a compilation of equations, graphs, tables, and similar data that are frequently needed in general radio engineering and in college instruction. Prepared by engineers who are specialists in the numerous subjects covered in the book, it is intensely practical and compact and constitutes a convenient single source of data.

"Reference Data for Radio Engineers" is published by the International Telephone & Telegraph Corp., Publication Department, 67 Broad Street, Dept. TE&M, New York 4, N. Y. It sells for $6.00 per copy and for $4.80 per copy in lots of 12 or more to a single address. The book contains 1121 pages and a 3500-item cross index.

BY BILL BROOKS

Our Telephones Went To A Farm Progress Show

Here's how General Tel. Co. of Indiana prepared displays that fit easily and sensibly into the overall theme. Part One of this article appeared in the December 1956, issue of "Telephone Engineer & Management."

Greeting The Visitors

TENT visitors were given the following step-by-step treatment as they entered the General Telephone tent:

(1) *Entrance greeters* (one man and one woman) handed out personal telephone booklets and, smiling, said "Welcome to the General Telephone tent."

(2) *Indiana map with explainer* who described the operations of our company.

(3) *United States map.* This map of the United States showed the states in which General Telephone System companies now operate.

(4) *Colored telephone display.* Emphasis at this display was simply on the fact that colored telephones are available for dial and common battery exchanges. Questions on cost were answered thus, "Well, some companies have different policies but our rate is . . . . " We assigned a woman from the commercial department to this display because most of the interest in colored instruments came from women visitors.

(5) *Special services peg-board.* Explainers did not attempt to describe each item on the board but only one or two, unless the flow of visitors was very slow. No demonstrations were given but literature on message recorders and loud-speaking telephones was available if visitors asked questions about these services.

(6) *Switch train demonstrator.* Explainers have a shortened version of what would really be an adequate technical description. Language was kept as non-technical as possible and visitors were urged to watch each selector and connector as it actually operated and then to answer the ringing telephone. This made them feel part of the demonstration which, it must be admitted, is very technical for the average layman.

(7) *Model farm display.* Emphasis by explainers was on the telephone wall-mounted in the barn. Then attention was called to the extensions in both rooms shown in the small cutaway house. The intercom theme between barn and house was stressed and mention was made of the loud-ringing bell on the outside of the barn.

(8) *Telephone parts display.* Little explanation was needed here as the exhibit was practically self-explanatory.

(9) *Cutaway house.* Three women alternated on the explanation of this display with roughly half-hour work periods because of the strain on the

JACK TAYLOR (left) and CHRIS HANSEN trace the history of dial telephones through the years in front of this display. Two pay booths were installed next to this exhibit. A rest area of a dozen chairs was also nearby.

Yes, Charlie, I don't
to wait for the operator--
make consultation calls

Note to telephone companies:
If you would like to tell your customers about the Leich 40A PABX, we'd be glad to send you a catalogue. Write us right away.

LEICH

LEICH SALES CORPORATION, 427 WEST RANDOLPH STREET, CHICAGO 6, ILLINOIS

t have
-- I can
s myself-- **with a Leich 40A PABX**

"This means we can make our consultation calls faster and easier, Charley. The telephone company people suggested it would be a big improvement.

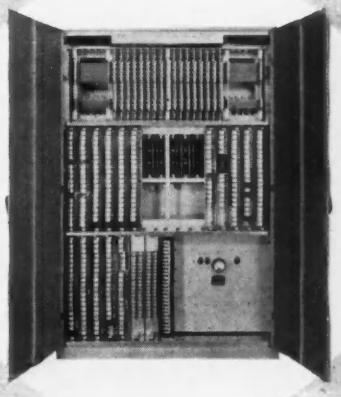
"And it's turned out to be good advice. Here's what I mean.

"When you're talking on a city trunk, calling an inside party without interrupting the city call can be a slow process. This is because some PABX's make you wait for the operator to connect the consultation call. But not with Leich's 40A PABX. All you have to do is push down the handset plunger momentarily.

"Then you receive dial tone and you can dial the inside number you want yourself. When you want to return to the city connection, you just press the handset lever again. Standard Leich telephones without special buttons or equipment are used.

"But the easy consultation feature is just one of the reasons we bought Leich's 40A PABX.

"TAKE A LOOK AT THESE OTHER FEATURES."



A. Key pulsing attendant's turret that's smaller than a typewriter.

B. Dependable, all-relay Leich Dial Switchboard.

C. Capacity of up to 40 telephones with 10 trunks to the main exchange, and 6 local links.

D. Local links are not tied up on extension dialed calls to city trunks.

E. Any inside station may call outside without waiting for attendant.

F. Quick extension of outside calls to any required telephone.

G. Restriction of outside calls if desired.

H. Night answering by any telephone.

I. Inside telephones have two digit numbers.

H Manufacturers of telephones, switchboards and related apparatus since 1907

LINOIS PACIFIC COAST: 11401 WEST PICO BLVD., LOS ANGELES 64, CALIFORNIA SOUTHWEST: 1227 SLOCUM STREET, DALLAS 7, TEXAS

vocal cords. When the women were not explaining this display, they alternated at the colored telephone display if the crowd warranted it. The volume of the public address system for the cutaway house was kept low so that only those visitors within 15 or 20 feet would hear every word. We did not want visitors near the entrance at the other end of the tent to hear the speaker and rush past other displays to the cutaway house.

One of the three cycles of the cutaway house was described thus:

"*Ladies and gentlemen, this is a cross-section of a typical ranch style home with a basement. The first part of this exhibit demonstrates the inconvenience of a one-telephone home. You will notice a large telephone ringing in the hall. Now you can see the silhouette of a young lady doing the family wash in the basement. The blinking lights represent the unnecessary steps she must take to answer her telephone. On your left is an illuminated shadow box showing how convenient it is when you have an extension telephone in your laundry. An extension telephone costs less than three cents a day. Save time, save steps, live better with an extension telephone. Thank you.*"

(10) *Antique telephones.* Most difficult angle of this display was keeping visitors' hands away from the telephones. Our explainers pointed out how much more beautiful, convenient to use, and efficient the modern dial instruments are than the old-fashioned telephones.

(11) *Two pay booths and rest area.* The historical exhibit explainers carried change in nickels, dimes, and quarters for patrons of the pay booths and watched the rest area for anyone who looked ill.

(12) *Slide projection unit.* Rotating colored slides showed our traffic and plant employes in different exchanges at various jobs inside and outside. The unit was manned by a traffic department supervisor and plant department supervisor who answered questions on possible employment with our company.

Determining Public Reaction

THE GREENCASTLE exchange manager, Bob Cooper, and our Sales Supervisor, Bill Heston, both of whom contributed more than their share of the success of the display tent, roamed the tent along with myself to see if everything was going as planned and to determine public reaction to displays and explanations.

JACK LORDITCH and RAY BUNDY (right) explained the many special services which General Telephone offers in addition to merely one telephone. No demonstrations were given of the electronic secretary or hand-free telephone because of the size of the crowd and the danger of clogging the aisle between displays.

At no time did we find any adverse reaction to our displays other than the fact that we thought the folks could have lingered a little longer at certain points. We had cautioned our explainers not to memorize their talks which would have made them mechanical and formal. This was our baptism by fire, so to speak, as far as large scale exhibits were concerned, so we were forced to "play by ear" until all of us got into the swing of it. We learned quickly.

The cable plow, for example, was a great attraction but we noticed that many of the crowd did not enter the tent unless one of us was stationed at the plow and invited them to "step inside and see the rest of our displays." Instead of losing about one-fourth of the outside spectators we thereafter lost only about one-tenth of those who stopped. Once again, as has been proved countless times in the telephone industry, it is the friendly, personal touch that counts.

We had arranged the tent displays in a U-shape so that the visitors would come in through one place in the tent and exit through another at the opposite end. Although we had a sign above the exit which pointed to the entrance, visitors tried to enter at the exit. We finally stationed an off-duty explainer at the exit to guide the folks (politely without losing them) to the right entrance.

Other important items we included inside the display tent were: four fire extinguishers suspended on tent side poles but in plain sight; first aid kit kept in drawer of table at entrance (all personnel were told of kit's location); rake, shovel, and sprinkling can to keep sawdust floor covering in order; thermos jug of water, chairs and newspaper behind cutaway house where off-duty explainers could rest between chores; cigarette and waste paper containers; overhead spotlights to highlight each display (placed high on center tent poles so temperature would not be raised to uncomfortable level — the spotlights generate an amazing amount of heat); extra light bulbs and extension cords; broom and rags to wipe dust and sawdust from displays, switchboard, rest area chairs, and pay booths; mechanical counter to keep count of visitor total (female greeter at entrance tallied all who walked through the entrance unless they were company personnel).

Photos of some of the displays were taken the day before the show opened and given to a television station in Indianapolis (40 miles away) for use over an evening newscast. A photo of the Indiana map display was given to the Indianapolis morning

paper along with general information about the Farm Progress Show (attendance, number of Flying Farmer airplanes, second day's schedule of events, etc.). Visits were made by us to all newspaper wire service offices in Indianapolis. The week prior to the show, we had mailed written invitations to see our display tent and the Farm Progress Show to all newspapers based in our 73 exchange areas.

The afternoon before the first day of the show, we gathered all our explainers and greeters in the tent, showed them through the tent, displays and explained our plans. That night we met in a conference room of a Greencastle hotel and went over any problems which we thought might arise.

At the end of the second and final day of the show, we assembled them in one end of the tent, thanked them for coming down to help out, told them some of the highlights of the two days which they might have missed (political candidates who visited the tent and were photographed, magazine photographers, witticisms by visitors, interesting questions, etc.), gave them the attendance figures, and wished them a pleasant, safe journey back to their home offices.

We feel there was not one major flaw in the entire undertaking. And somehow we feel that the 7,086 visitors would agree. — *Bill Brooks.*

Book Review

"Patent Notes for Engineers," by C. D. Tuska; About 192 *pages, illustrated; McGraw-Hill Publishing Co., 327 W. 41st St., New York* 36, *N. Y.; Price* $4.00.

Clarence Tuska, director of Patent Operations at RCA Laboratories, Princeton, N. J., formerly editor of QST magazine and a manufacturer of radio receivers with the Atwater Kent Manufacturing Co., is the author of this new revision of *"Patent Notes for Engineers."* Its purpose is to acquaint engineers with patent matters. Originally prepared for the use of RCA engineers only, it has received enthusiastic acceptance.

The book ably bridges the gap between the inventor and the patent attorney. It gives a clear idea of what patentable inventions are and how to protect them.

Telephone companies report:

School-to-home service brings extra revenue and builds goodwill!

Thousands of homebound and hospitalized children "attend" school via telephone. Through the Executone the shut-in hears everything in the class. He talks to his teacher and classmates, recites, and participates fully.

Many telephone companies, working with schools throughout the country are enthusiastic about the results from their School-to-Home Service.

In addition to providing an important public service, its news interest stimulates favorable publicity—as evidenced by newspaper and magazine stories, radio and TV programs from coast-to-coast.

"Teaching by telephone" has been nationally accepted by educators and doctors. This service, readily available on a rental basis, provides the educational, psychological, and social values of daily, near-to-normal classroom participation to thousands of children physically unable to attend school.

Your local school and health authorities will be glad to know that you can now provide this humanitarian, educational public service.

For complete information—mail the coupon today!

SPECIAL EDUCATION DIVISION

EXECUTONE, INC.

415 LEXINGTON AVE., NEW YORK 17, N. Y.

Please send descriptive literature, technical and cost information on the SCHOOL-TO-HOME TELEPHONE SERVICE.

Name_____ Title_____

Company_____

Address_____

City_____ State_____

"Not A Formula— But A Way Of Life"

PUBLIC RELATIONS and overtones are not a formula, but a way of life. Overtones are just the Golden Rule at work in business. Try to do for the other fellow what you would have him do for you if he were in your shoes. When you get right down to it, that's all there is to a good effective public relations policy. Public relations are a lot of things, but mostly public relations are *you*.

A telephone company is a monopoly to the extent that it renders the only telephone service in town. If your customers don't like your service they cannot go somewhere else for it. As a result it is easy for the subscriber to get the impression that you are not too interested in his service or that you just don't care, since he has to take it anyway.

Most telephone companies are sincerely interested in their customers. However, it is one thing to be interested and another to not let your customers know you are genuinely interested. An organization can be very efficient but still not be considered friendly, interested and helpful in its public relations. People like to feel they receive personal attention and that their requests or criticisms have received individual consideration.

(1) *The customer should feel that it is easy to get the company to listen sympathetically and properly understand his problem. Otherwise he will not feel assured that the proper action will be taken.*

(2) *Recognition of unusual situations where action beyond normal requirements should be taken helps prevent the possible impression of arbitrary rules without regard for the customer's individual problem.*

Each contact with our customers, whether it be face to face, by telephone or correspondence, should be regarded as presenting an opportunity to build up liking for and confidence in our company. This is true in even the smallest company and is one of the simplest of contacts. Much has been said about overtones as they affect public relations in the utility business over the past several years.

"An Added Pleasantness"

AN OVERTONE is an added pleasantness, an added naturalness, in short a disposition to look at people with an unexpected friendliness. Sometimes overtones are described as the frosting on the cake. Sometimes it is difficult to put your finger on overtones. Its an acquired pitch of the voice, plus mannerisms, that make *"I'll be glad to help you," or "I'm sorry we made a mistake,"* sound completely sincere.

We and our employes can put frosting on the cake, in fact all utility people can be ambassadors of good will, radiating interest and a spirit of helpfulness in serving our customers. In other words *sincerity* is the *keynote*.

The need for improving public relations is ever constant. Therefore, we should pause once in a while to examine our practice or lack of practice of overtones. Good public relations begin with performance. This means that in addition to being aware of its responsibility to the public, management must have the will and desire to do the right thing. It cannot think and talk one way and act another.

If a public utility company's service doesn't measure up to high standards, then all the advertising and publicity you can muster won't convince the public that it is a good company. We just can't have good public relations without good service. However, we can give good service and still not have good public relations.

The most important relationship of any public utility company is its relationship with its customers. It is based primarily on one thing. A genuine desire to serve on the part of the company.

In creating this genuine desire let's promote a:

(1) *Real interest in providing the subscriber with good service.*

(2) *A true interest in giving the community service of which it can be proud.*

(3) *Giving the service in a pleasing manner.*

This means giving the customer what he wants, where he wants it and when he wants it in a friendly, courteous and helpful manner.

In practicing overtones let's be careful to avoid undertones. Let us strive never to be curt or abrupt. Let us remember that our office practices and routines must be tempered with common sense. They cannot be too rigid at the expense of public relations.

Our company believes that what is good for the customer is good for ourselves, and we endeavor to create a good impression with our telephone callers.

Since incoming telephone calls mean incoming business, our employes observe the following rules:

(1) *Answer your telephone promptly.* That is the first rule in good telephone manners on incoming calls. When the telephone rings it means someone is knocking at your door and courtesy dictates that he be recognized and greeted as quickly as possible. Give your undivided attention to the caller. It is not only discourteous to continue a conversation with someone at your desk but you could divulge information that is personal or confidential. Be as courteous "voice to voice" as you would be "face to face."

(2) *Indentify yourself immediately.* "Hello," "All right," or "Yes," as a means of greeting a telephone caller in a business establishment are just about as useful as a grunt. Unless the voice is familiar, this type of answer indicates only that the receiver has been lifted and somebody is at the telephone, which is no assurance that it is the right company or person. The right way is the easy way on the

telephone lines, the caller has heard five words, but has found out three very important things: (1) he's reached the right Company, (2) he knows to whom he's talking; and, (3) the Missouri Telephone Company has welcomed him in.

(3) *Give the caller a chance.* After you have announced yourself, give the caller a chance to tell his story or ask his question in his own way, and without interruption. You will have plenty of time to talk after he has finished. He has gone to the trouble to call you and you owe him the courtesy of listening to what he has to say. There may be times when you know what he is going to say, even before he says it. To you it may be just another routine call, but to him it is a matter of great importance, so don't minimize it. You will never be sure you have all the information the caller wishes to give you unless you let him talk.

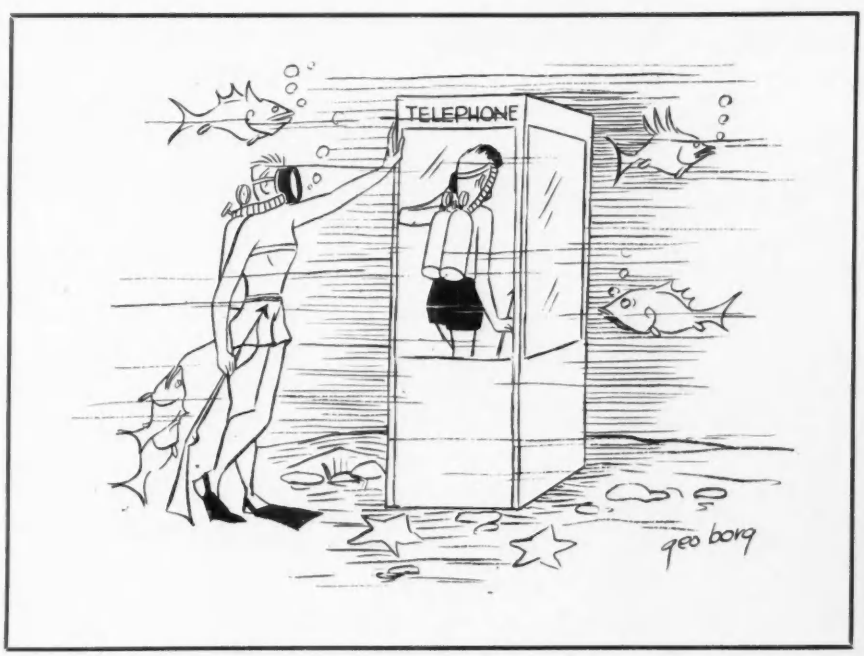
(4) *Calls for others.* Be as helpful as you can on every call. How many times have you called someone and been greeted with, "Who's calling," or "He hasn't come in yet this morning." How much better to say, "He's not in the office at the moment, may I help you?" or "May I ask him to call you?"

(5) *Complaints.* "I'm sorry." Only one standard rule applies when handling complaints of all kinds, and that is, put yourself in the caller's position. Then give him the help and understanding you would like to receive if you were doing the complaining.

Complaints are potentially bad advertising for your company. Dissatisfied customers, unfortunately, talk more than satisfied ones. Complaints should be handled on an individual basis, and the only requisites for handling them properly are common sense and good judgment. Start with the promise that the customer has a justifiable complaint and work from there. Don't be afraid to say "I'm sorry there seems to be a mistake." Remember — the caller's problems are the reasons for our jobs.

(6) *Termination of call.* When you feel that the matter is completed, the conversation can be brought to a close by thanking the person for calling or by verifying the action you are going to take as a result of the call. Always say "Goodbye," adding the caller's name if you know it.

Public relations and overtones are — a combination of the "little things" we all appreciate. It is a "thank you" in return for a favor. It is a "please" when making a request. It is a pleasant "goodbye" at the close of a telephone conversation. The impression you leave with the customer is the impression he will associate with your company. Make him feel he has reecived pleasant, dependable service from pleasant dependable people. — *Adapted from a paper presented at the* 1956 *district meeting of the Missouri Telephone Association.*



"They meant it when they said service *anywhere*!"

Mr. Manufacturer -

this 310 page book

what the telephone industry buys

will open your eyes

to the tremendous market potential awaiting you in the $17 billion telephone industry . . . whether you manufacture autos, tools, trucks, office machines, etc.

TELEPHONE ENGINEER'S Annual Catalog - Directory "Where Sellers and Buyers Meet"

If you wish to participate in the country's fastest growing market this directory shows all of the many hundreds of items used in a telephone plant—plus the manufacturers and suppliers serving the industry.

All items are alphabetically listed . . . ranging from acetylene torches, adding machines and augers, through typewriters, wires and wrenches. Just looking over these items will give you the insight you need preparatory to going after your share of this huge pie—$1½ billion worth of materials, supplies, etc., purchased each year by telephone companies.

write for a FREE COPY of the current (1956) issue

CIRCULATION to telephone industry 12,000 copies

More than double the circulation of competing directory.

The 1957 edition is now being compiled.

Order Space Needs Today

TELEPHONE ENGINEER Publishing Corporation

Publishers of Telephone Engineer & Management

Phone ROgers Park 4-3040

7720 Sheridan Road • Chicago 26, Ill.

elephone
tips
homemakers
you need 2 outside lines PLUS intercommu
Here's a telephone for you with all these services:
Two lines, either direct to outside, or connected to a switchboard.
Intercommunication circuit.
Provisions for holding calls on either or both of the outside lines.
A "recall" button to signal the operator or redial a call.
Streamline your business communications
How to solve your pro
of telephoning in nois

Ammunition for your 1957 revenue-building campaign

With the help of sales-promotion literature, written in *subscriber language* and yours free of any charge, you can plan aggressively to go after extra revenue in twelve areas of service.

Samples of any or all will be sent on request. Meantime, why not look at the chart below and decide which of these colorful folders and stuffers can help you plan for a big increase in '57.

FORM NO.	DESCRIPTION	BILL INSERT (General Subscriber)	BILL INSERT (Commercial Subscriber)	DIRECT MAIL ENCLOSURE (General Subscriber)	DIRECT MAIL ENCLOSURE (Commercial Subscriber)	PAYMENT and SERVICE COUNTER HAND-OUT	SALESMAN'S "DOOR-OPENER" (General Prospect)	SALESMAN'S "DOOR-OPENER" (Industrial—Commercial)	HAND-OUT at CIVIC SHOWS, FAIRS, etc.	HAND-OUT at INDUSTRIAL EXHIBITIONS, etc.
T-152	Solid Color Phones 6 pgs.—3¼" x 6"	✓	✓	✓	✓	✓	✓	✓	✓	✓
T-153	Two-Tone Phones 4 pgs.—3¼" x 6"	✓	✓	✓	✓	✓	✓	✓	✓	✓
T-155	Extension & Wall Phones 4 pgs.—3¼" x 5¾"	✓		✓		✓	✓		✓	
T-156	Koiled Kords 1 pg.—3¼" x 5¾"	✓	✓	✓	✓	✓	✓	✓	✓	✓
T-157	Plug-in Phones 1 pg.—3¼" x 5¾"	✓	✓	✓	✓	✓	✓	✓	✓	✓
T-158	GAI-PHONES 1 pg.—8½" x 11"		✓ (Fold)		✓			✓		✓
T-159	Hands-Free Phone 4 pgs.—8½" x 11"		✓ (Fold)		✓			✓		✓
T-160	2-line Telephone 1 pg.—8½" x 11"		✓ (Fold)		✓			✓		✓
T-161	PBX Switchboards 4 pgs.—8½" x 11"				✓			✓		✓
T-162	Key Turrets and Convenience Systems. 4 pgs.—8½" x 11"				✓			✓		✓
T-163	"6K System" 4 pgs.—8½" x 11"				✓			✓		✓
T-164	F-40A—PBX 4 pgs.—8½" x 11"				✓			✓		✓

STROMBERG-CARLSON COMPANY

A DIVISION OF GENERAL DYNAMICS CORPORATION

Sales Offices: Atlanta 6, Chicago 6, Kansas City 8, Rochester 3, San Francisco.

Questions and ANSWERS

Conducted by Jay G. Mitchell

This month, Mr. Mitchell answers questions on — (a) Peak to Peak Voltage; (b) Basic Elements of a Rate Case; and (c) Literature about Transistors. If you'd like quick help on some technical problem, send an inquiry to Mr. Mitchell, Telephone Engineer Publishing Corp., 7720 Sheridan Road, Chicago. A letter will bring you a quick reply. Please enclose self addressed and stamped return envelope.

Peak To Peak Voltage

QUESTION:—In a recent discussion, during rainy weather, one of the group who had been away from this country for some time in the service of communication equipment used the term "Peak to Peak" in reference to voltage. This was offered as a possible explanation of the failure of certain items of equipment, particularly, condensers. No one present was able to give an understandable explanation of this term and it was suggested that an inquiry be sent to "QUESTIONS AND ANSWERS" asking for one. It would be very much appreciated therefore if the meaning of this term might be outlined with a basis for deciding when it becomes important to consider it in the routine maintenance of communication equipment. Stamped and directed envelope is enclosed for a direct reply.

ANSWER:—The term "Peak to Peak Voltage" is probably one of the most widely *misunderstood* expressions in the technical language pertaining to communication equipment. Because of the similarity in sound, for illustration, it must be clearly differentiated from the term "Peak Voltage" which has an entirely different meaning.

In any electrical circuit carrying alternating current the voltage of which varies as a *sine* curve the *alternating* voltage as indicated by an alternating current voltmeter of the conventional type, as was pointed out in the answer to a recent inquiry in QUESTIONS AND ANSWERS, is numerically equal to the square root of the *average* of the squares of all the *instantaneous* values through which the alternating voltage passes. This is called the root-mean-square (R.M.S) voltage. This R.M.S. voltage is of the greatest importance in all calculations pertaining to the conservation of the *energy* transmitted over alternating current circuits.

However, since the R.M.S. value must be somewhat lower than the maximum instantaneous voltage and somewhat higher than the minimum instantaneous voltage in the circuit, it must be corrected to obtain an indication of the possible effect, for instance, of breaking down insulation initially. This insulation breakdown power is indicated by the "Peak Voltage" of the current and may be computed for most practical cases from the observed R.M.S. voltage by multiplying the R.M.S. voltage by 1.414 qr, what is essentially the same thing dividing the R.M.S. voltage by 0.707. This obviously refers to both the positive and negative instantaneous values through which the alternating voltage passes, a full wave rectifier in the voltmeter being interposed to accurately measure the root-mean-square value.

The "Peak to Peak" voltage, however, is computed by dividing the root-mean-square (R.M.S.) value shown by conventional alternating current voltmeter by 0.355 or multiplying it by 2.818 which is essentially the same thing. It is obvious that the "Peak to Peak" voltage is voltage to which any item of equipment is subjected as the alternating current voltage varies from the positive maximum through zero to the negative maximum and back to the positive maximum, in each complete cycle. The time element, which is of great importance, is determined by the frequency and the characteristics of the entire circuit involved.

Elements of A Rate Case

QUESTION:—This telephone company is confronted with so many requests for service together with inadequate and cramped space in our present building, and limited capacity of equipment that is very old and incapable of carrying the present amount of local and toll service unless completely overhauled, that we have practically decided to build a new office and exchange and to install dial equipment of much greater capacity for the local service.

It is our thought that we can make the necessary preliminary study of the whole proposition, the preparation of an application to the State Commission in proper and effective form to be developed later. Can you outline the preliminary steps?

What we wish to do in the first place is to develop the basis for an ultimate rate case ourselves if that is possible. Please supply a rough general plan for us to follow so that we may develop a basis for expert presentation to the State Commission later. Thank you.

ANSWER:—There is but one

answer that can be made with safety to this inquiry. That answer must be a recommendation that this company secure expert help in developing the preliminaries for its proposed action. The purchase of new equipment should be based on a careful study of the factors involved. These will be, amongst others, accurate studies of the present and probable future traffic likely to be handled, the design of the new building to accommodate expansion for the future demands for service, the accurate cost of the *present plant* and its cost when the proposed improvements have been made, the probable changes and improvements in the outside plant and the probable development of the toll service after improved local service shall have been made available.

The points enumerated are not all that should be covered either. This company is fortunate in being located in a state which has a very competent Public Service Commission. For this one reason "*QUESTIONS AND ANSWERS*" counsels the engagement of expert help for the entire proceeding. The expenditure of the amount required may well be as much or more than the probable authorized increase in annual revenues obtained. A sketchy and more or less incomplete presentation of the entire basis for relief should include the following principal exhibits *together with all* supporting details. It is likely that this telephone company has several of these portions of its situation fully worked out. It would be wise to coordinate all such data, however, so that evidence suporting all phases of the case may be fully effective when considered by the Commission.

The salient divisions may be listed as follows:

(1) An accurate large scale map of the *town* service area. This should show all streets and alleys, all underground and aerial cable installations, all pole lines and all proposed additions for furnishing improved service facilities, and, preferably all existing installations for subscribers.

(2) An accurate large scale map showing all *rural* service stations and toll circuits and roads. This map should also show the boundaries of the service area for each office, the lines of separation between different service areas being drawn through the area in their proper locations which should *not be along roads.*

(3) Classification of subscribers' service giving the number of each class in each office with the *present and proposed rates for each classification.*

(4) Analysis of rates, revenues and operating expense for several recent years.

(5) Analysis of proposed rates and future operating expense per year.

(6) Estimated total cost of proposed new Central Office Equipment and New Building.

(7) Estimated *Net Cost* of plant rehabilitations and expansions covering all items necessary to insure the improved future service.

It is the opinion of "*QUESTIONS AND ANSWERS*" that this telephone company may proceed with the preparation of these exhibits but that time and expense will be saved if the final arguments and exhibits are prepared by an experienced agency for final presentation to the regulating bodies. This is because there are many details that become of importance in a rate case which are not currently essential in the management of the property.

Transistor Literature

QUESTION:—In a recent news paragraph it was said that a small device called a transistor might be used with some other items of electrical equipment to provide a more pleasing kind of signal for the called telephone in commercial telephone systems. We understood this statement to mean that the usual polarized telephone ringer might give way to some improved form of calling device in the future in which the transistor would be used. Will you describe the transistor and briefly outline the characteristics that make it suitable for an improved and more pleasing type of calling telephone signal than the established type? Or, if that is impractical will you kindly list some books that are available and are suitable for home study of this device as to its construction and operating principles? Thank you.

"Send someone to take me home, mother, the honeymoon is over."

ANSWER:—This inquiry points the way to acquiring an understanding of the basic principles which are exemplified in this marvelous electronic device. It is the opinion of "*QUESTIONS AND ANSWERS*" that every individual who is connected with the conventional forms of communication equipment in any capacity could, profitably, learn the marvelous story that is the basis of the many forms and demonstrated applications of this device.

Space does not permit making any attempt to outline this subject in a reasonably understandable form. It is suggested therefore that this inquiry be made the starting point for some home study. A few of the books now available for this correspondent to read with profit are listed below.

(1) "Fundamentals Of Transistors," by Leonard Krugman.

(2) "Transistors Theory and Practice," by Rufus P. Turner.

Both number one and two are suitable for reading to acquire the preliminary facts and both are inexpensive.

(3) "Electrons And Holes In Semiconductors," by William Shockley. This book is a treatise suitable for the advanced student and is one of the Bell Laboratories Series.

Any or all of these three recommended books can be purchased through "*Telephone Engineer and Management*" and all three are recommended. In addition any specific inquiries that can be answered understandably will be analysed and explained. It is again strongly recommended to the men in the communication industry that they acquire as complete an understanding of this marvelous device as possible. This should include familiarity with the classification, the nomenclature, the symbols and the parts. — *Jay G. Mitchell*

TELEPHONE ENGINEER & MANAGEMENT'S

HANDBOOK DATA SHEETS

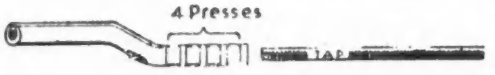
Prepared By

JOHN S. REED

Connecting Jumper or Drop Wire

At terminations on dead-end brackets, jumper or drop wires are connected to the line wire as illustrated.

FIRST STEP: REMOVE INSULATION FROM END OF DROP OR BRIDLE WIRE (TAP WIRE). CLEAN BARE END THOROUGHLY. (ALSO CLEAN LINE WIRE AT SPLICE POINT.) PASS TAP WIRE THROUGH BRACKET OPENING AND WRAP AROUND LINE WIRE. INSERT TAP WIRE IN OFFSET TAP SLEEVE AND CRIMP AS SHOWN.



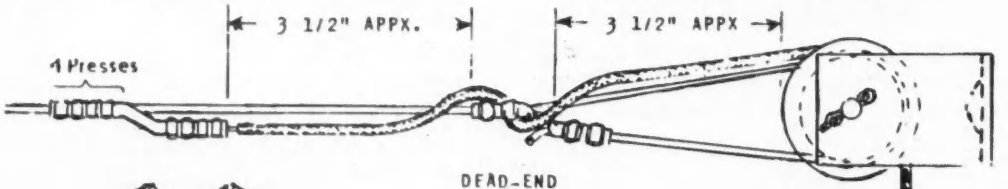
SECOND STEP: PLACE GROOVED END OF SLEEVE ON LINE WIRE. PINCH EDGES OF GROOVE TOGETHER TO HOLD SLEEVE TEMPORARILY ON WIRE. CRIMP THIS END OF SLEEVE AS SHOWN.

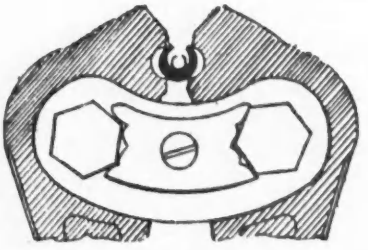
OFFSET TAP SLEEVES

FOR DROP OR #18 BRIDLE WIRES:
- T2-109x045D — 109 STEEL WIRE
- T1-102x045D — 104 COPPER WIRE
- T1-128x045D — 128 COPPER WIRE
- T1-080x045C — 080 COPPERWELD WIRE

FOR #14 JUMPER WIRES:
- T2-109x064D — 109 STEEL WIRE
- T1-102x064D — 104 COPPER WIRE
- T1-128x064D — 128 COPPER WIRE
- T1-080x064C — 080 COPPERWELD WIRE

FOR BARE WIRE JUMPERS:
- T2-109D — 109 STEEL WIRE
- T1-102D — 104 COPPER WIRE
- T1-128D — 128 COPPER WIRE
- T1-080C — 080 COPPERWELD WIRE



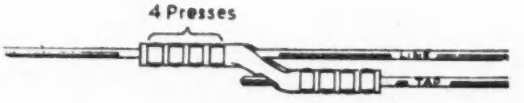


BE SURE CRIMPING TOOL IS PROPERLY POSITIONED AS SHOWN TO CRIMP OPEN END OF TAP SLEEVE ON LINE WIRE.

WHEN LINE IS OPENED FOR TESTS, RECONNECT WIRE WITH 3-064B SLEEVE FOR #14 JUMPER WIRE (3-045B FOR DROP WIRE), MAKING 3 CRIMPS ON EACH END WITH DROP WIRE COMPRESSING TOOL. ON SUBSEQUENT OPENINGS OF LINE, RESPLICE WITH ADDITIONAL SLEEVESAS REQUIRED. STAGGER SPLICES AND WRAP WITH FRICTION TAPE TO PREVENT SHORTS OR GROUNDS.

FOR BARE WIRE JUMPERS, METHOD IS AS FOLLOWS:

1. THOROUGHLY CLEAN PORTION OF LINE WIRE AND TAIL TO BE SLEEVED. ATTACH TAP SLEEVE TO TAIL WITH 4 CRIMPS AS SHOWN.



2. SLIP GROOVED PORTION OF TAP SLEEVE OVER LINE WIRE. PINCH EDGES OF GROOVE TOGETHER WITH PLIERS TO HOLD SLEEVE TEMPORARILY ON WIRE. CRIMP THIS END 4 TIMES

TELEPHONE ENGINEER & MANAGEMENT'S

HANDBOOK DATA SHEETS

Prepared By

JOHN S. REED

Index 3-20.035.4
Wire Plant — Compression Sleeves (Reliable Squeez Sleeves) and Grips
Page 1, Feb. 1, 1957

Reliable Squeez Sleeves for Telephone Line Conductors

Reliable Electric Company's Squeez Sleeves are straight compression type sleeves intended for splicing telephone line conductors, using the compression tools designed for them. Reliable Squeez Taps, Deadends and Repair Sleeves are other forms of sleeves respectively employed for tapping and deadending telephone wires and for replacing defective line connections.

To identify the compression sleeves for use on various kinds and sizes of wires, the sleeves are marked, where space permits, with a code number in addition to the maker's name and die groove designation. This code number denotes the wire gauge, die groove, and sleeve material.

To illustrate the sleeve marking system, take the 12-D-5 splicing sleeve illustrated above as an example. The first number (12) is the wire gauge. The letter (D) denotes the size of the die groove. The last number (5) indicates the sleeve material. The sleeves are made of copper, bronze, or steel. In some cases, the copper and bronze sleeves are plated, while steel sleeves are always plated. Non-plated sleeves are normally utilized with copper (AWG), bronze, and copperweld wires, and plated sleeves with steel (BWG) wire. The composite or reducing type sleeves for steel to copper have a combination material code number for steel to copper, such as 21 or 41. The sleeve material is designed as follows:

1—Copper
2—Plated copper
3—Bronze
4—Plated bronze
5—Plated Steel
21—Plated copper, composite
41—Plated bronze, composite

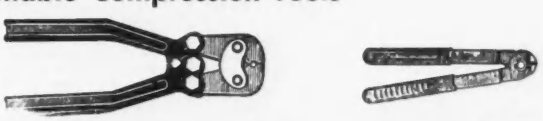
The code designations for repair sleeves, taps, and deadends carry the additional code letters—L (long), T (tap) and D (deadend), respectively. Reducing sleeve numbers indicate the wire size at each end.

Each type of sleeve develops the full strength of the wire in the line. Both electrical and mechanical efficiency are assured when proper sleeve and die are used. The sleeves and tools with standard dies are made to the close tolerances characteristically necessary for the work to be done. Sleeve sizes, as well as die groove dimensions, are determined by the size and tensile strength of the wire to be spliced.

All Reliable Squeez Sleeves except Squeez Taps, are internally impregnated with a dispersion of fine, sharp silicon carbide particles to lock the sleeve to the wire. When compressed, the joint is sealed against corrosive gases and moisture, producing a stable, low-resistance joint.

The information in the HANDBOOK DATA SHEETS, furnished through the courtesy of Reliable Electric Company, covers sizes of compression tools and sleeves suitable for use on telephone wires.

Reliable Compression Tools



LEFT: Reliable No. 2-DC and No. 2-DJ Compression Tools for D, C, and J Type Sleeves. RIGHT: Reliable No. 3BA Compression Tool for A and B Type Sleeves.

The Reliable compression tools illustrated above are designed for use with Reliable compression sleeves. They are equipped with integral standard dies and are factory adjusted. The jaws and the linkages are made of special heat treated alloy steel. The handles are of drop forged steel.

Various sizes of compression tools with different die combinations are available. For telephone work, the Nos. 3BA and 2-DC or 2-DJ compression tools are considered the most versatile. The No. 3-BA is a light weight (6 ounces) tool for use with "A" and "B" type sleeves. The 2-DC (or 2-DJ) is a rugged toggle action tool designed to obtain easy and positive closure in crimping the heavier type sleeves coded "D", "C", or "J".

For adjusting compression tools to compensate for wear, proper instructions and gauges for making the necessary adjustments are available from the manufacturer. This work preferably should not be done in the field, but rather in the company shop by authorized personnel.

A TELEPHONE ENGINEER OPERATING MANUAL

FUSELESS PROTECTION

By JOHN S. REED

PART TWO of the TE&M Operating Manual on "Fuseless Protection" discusses (1) Arresters, and (2) Ground Connections. Part One appeared in the Jan. 1 issue of TE&M.

THE PROTECTOR units illustrated in *Figures* 8 *and* 9 make use of a thermoplastic acetate dielectric between two carbon blocks to provide an air gap. On heavy or prolonged discharges, the blocks will come together in direct contact and extinguish the arc.

For protection at drop wire and open wire connections in cable terminals, fuseless protection is incorporated in new types of cable terminals. The protector units in this application are designed to operate at a higher voltage, the same as with regular protected terminals or terminals with arrestor mountings. Terminals with fuseless type protection are illustrated in *Figures* 11 *and* 12.

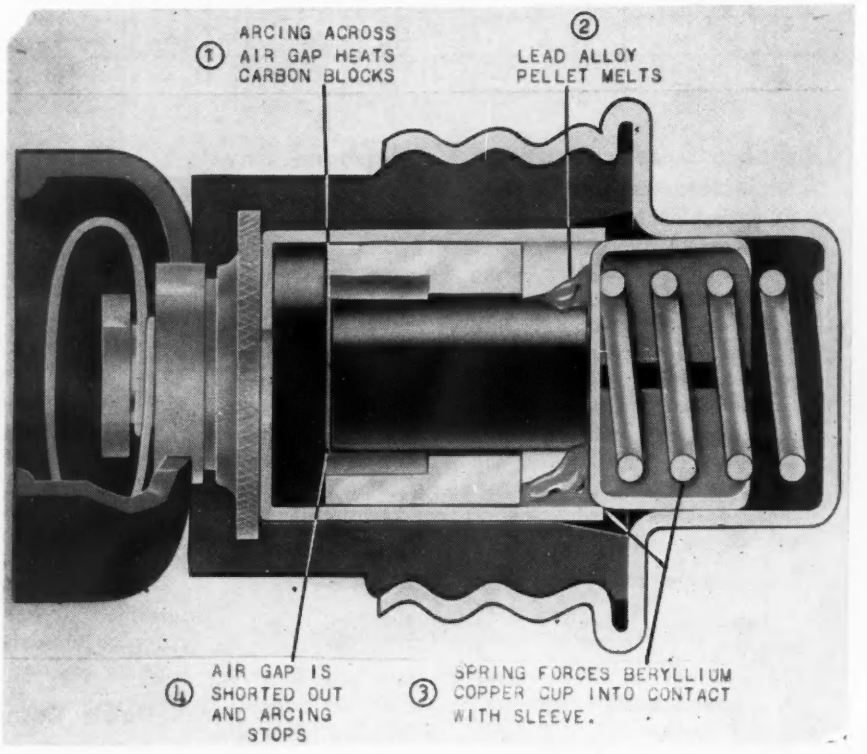

① ARCING ACROSS AIR GAP HEATS CARBON BLOCKS
② LEAD ALLOY PELLET MELTS
④ AIR GAP IS SHORTED OUT AND ARCING STOPS
③ SPRING FORCES BERYLLIUM COPPER CUP INTO CONTACT WITH SLEEVE.

FIGURE 7-C: — The Reliable protector unit on operation by power current discharge. The steps of protection operation are shown in successive order from 1 through 4.

Cook Electric Mytigap Arresters

THE COOK Electric Mytigap Arrester is designed for use as a lightning arrester, surge, and power cross protector with self-restoring feature. This type of arrester, illustrated in *Figure* 12, is designed to reduce maintenance costs involved in the servicing of carbon type dischargers, and at the same time make possible field repair of the dischargers through replacement of damaged parts of the arrester. This is accomplished by the use of discharge electrodes and ceramics similar to those employed in automobile spark plugs and a self-restoring device which automatically grounds the circuit and then clears it after the foreign potential is removed from the line.

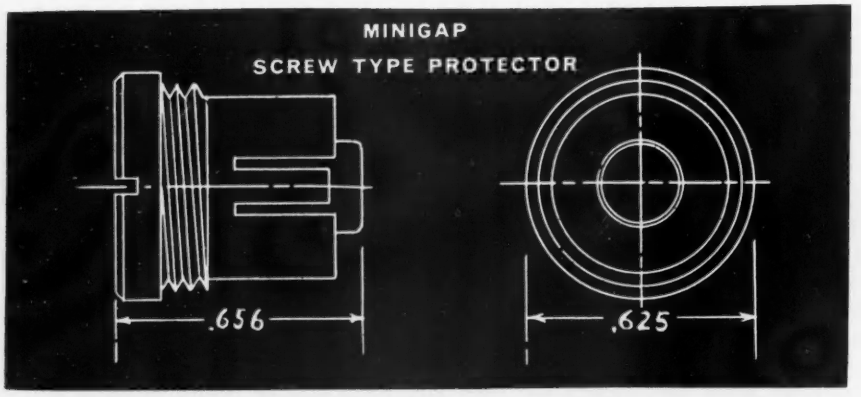


FIGURE EIGHT: — Cook Electric Company "Minigap" screw type arrester for Intercepter fuseless subscriber protector. This arrester has two carbons with a thermoplastic acetate dielectric providing an air gap. In event of heavy or prolonged discharges, the dielectric will burn away, causing the blocks to come together and extinguish the arc to prevent overheating of the protector.

The new type of arrester employs no carbon or organic material in its construction as indicated in the exploded views in *Figures* 13 *and* 14. Its discharge electrodes are in alloy of nickel manganese and RU78. This is the same material used for the electrodes in automobile spark plugs, and it is stated that it will withstand destructive arcing and oxidation better than any other known material.

The internal structure of the Mytigap arrester is so arranged that an arc of moderate duration will cause the electrodes to warp together, thus providing a continuous metallic path

A TELEPHONE ENGINEER OPERATING MANUAL

FUSELESS PROTECTION

(Continued from page 50)

to ground and eliminating the arc. These electrodes stay in contact as long as they are sufficiently hot, but when the disturbance ceases, they quickly return to their normal position, leaving the telephone line in its normal state. The Mytigap arrester

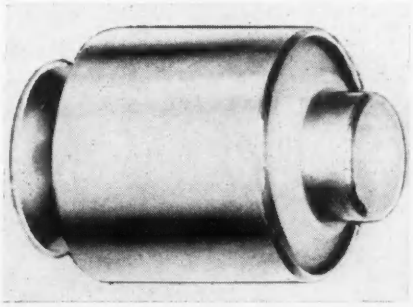


FIGURE NINE: — Cook Electric Company "Minigap" arrester designed for use in "Stranterm" cable terminals. This arrester has a carbon to carbon air gap with acetate dielectric that burns out on heavy discharges and brings the blocks together to short out arc.

is also arranged so that the interior parts are readily accessible and, therefore, any parts that become melted by extreme disturbance can be readily replaced in the field.

Fuseless station protection is limited to areas where subscribers are served by cable. According to Article 800 of the National Electrical Code, the fuses in the protector may be omitted on circuits entering a building through metal-sheathed cable, provided that the metal sheath of the cable is grounded. A protector without fuses may be used where insulated conductors are used to extend circuits to a building from a cable having a grounded metal sheath. The insulated conductors must have approved insulation as specified by the Code and the protector must be approved for this purpose.

Standard telephone cable, and drop wires from cable terminals meet these requirements. The code also permits the use of uninsulated attachments for the drops when an approved fuseless protector is installed. This means that drop wire hooks can be used for attaching the drop to the building and the wire can be run in bridle rings, regardless of the kind of siding and type of building construction. An insulated bushing, like porcelain or plastic tube, is not required in the entrance hole for the drop wire.

Fused type protectors are required at subscriber stations connected to open wire of any length, since the National Electric Code provides for the use of approved type protectors without fuses only when the subscriber's station is served by a grounded sheath cable with insulated wire to the station. According to this rule, rural distribution wire would be under the same category as open wire, as far as protection is concerned, and stations served by the distribution wire would have to have protectors with fuses. Insulated attachments (porcelain knobs and tubes) are still required for the drop run

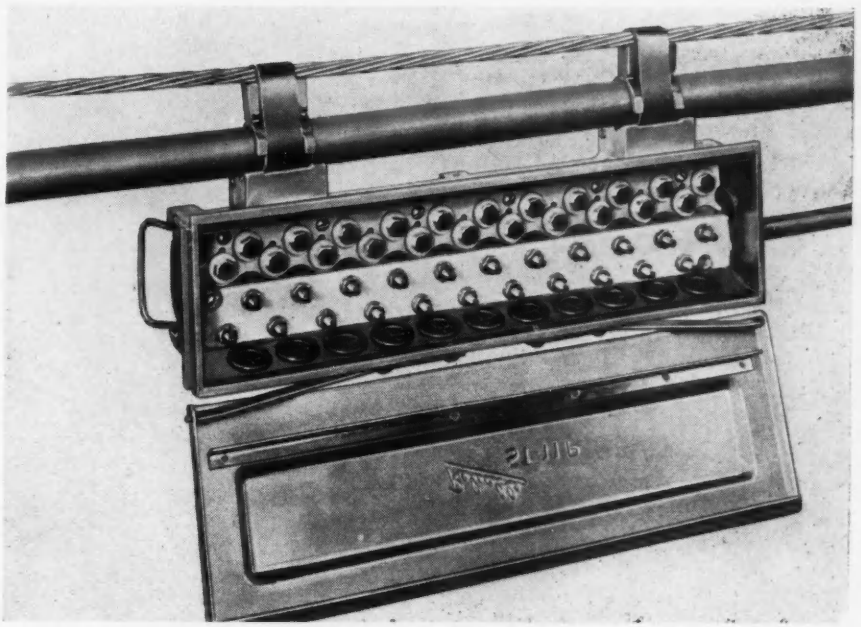


FIGURE ELEVEN: — Reliable Electric Company's protected type strand mounted terminal equipped with No. 506 protector units for protecting cable pairs.

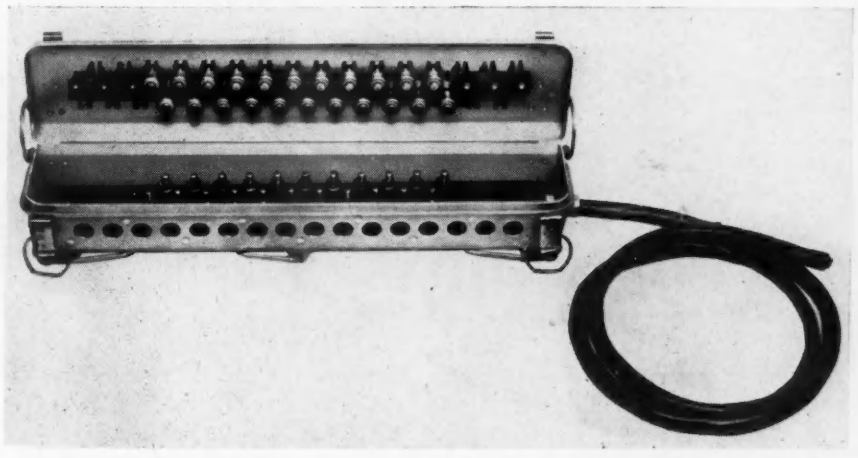


FIGURE 10: — The new Cook "Stranterm" with novel design permitting use of Minigap arresters as needed for protection of few or all cable pairs in the terminal count.

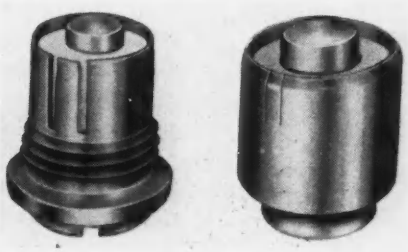


FIGURE 12: — Mytigap arrester (left) designed for interchangability with other manufacturers' terminals. Mytigap arrester (right) designed for Cook terminals.

into the building when fused type protectors are installed.

Good Ground Connections Essential

THE SUCCESSFUL application of fuseless protection hinges upon the availability of a low resistance ground connection for the protector. Such a condition assures a maximum fault current that produces extremely rapid de-energization of the power line involved. Prompt de-energization results in minimum damage to telephone plant and maximum safety to plant employes.

Ordinarily a ground connection is thought of as an earth termination, with the current passing through the soil to another similar termination whence it returns to its source. Actually the so-called ground connection may be, and often is, a return through a common metallic frame or network of very low resistance. For example, in station installation, the protector ground post is connected to a water pipe which is part of a network of water mains to which the power neutral is connected at various points. This common grounding is very desirable as it produces a very low resistance path from a power fault operating through a connection with a telephone line back to the neutral of the power system, resulting in maximum fault current and prompt de-energization of the power line.

This common grounding is also important for equalizing potential differences that might exist between electric light and power conduit, gas pipes, heating ducts, or steam lines and telephone wiring. The water pipe connection provides the best type of common grounding for protecting telephone wiring from potential differences existing on the various house facilities as the result of lightning or power faults.

In situations where connection cannot be made to a water pipe which is part of an extensive (municipal) water system, other alternatives will have to be employed as follows: (1) Connection to power service conduit, service equipment enclosures, or grounding conductor of the power service; (2) to a gas pipe at the point where it enters the house or beyond an insulating joint if one is present (only if permitted by the gas company); (3) to water pipe of private water supply as from a well, one side of pump connected to the well, where at least ten feet of pipe is underground in a permanently moist location; or to a permanently buried tank or other metallic structure, particularly when the electric service on the premises is also grounded to the same structure; or (4) to a ground rod placed for the ground conductor of a multi-grounded power neutral. In the last case, if the power system does not have a multigrounded neutral, no direct connection should be made to the power company's ground rod, but, when agreed to by the power company, it is permissible to run a heavy bond wire between the power company's ground rod and the telephone company's ground rod placed for the protector. The telephone ground rod and the power ground rod should not be closer together than 6 feet.

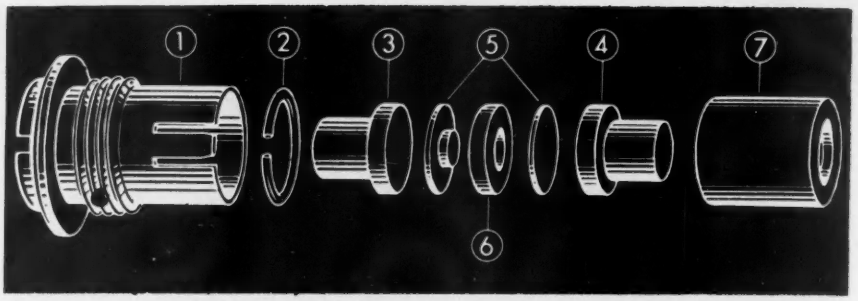


FIGURE 13: —— Exploded view of Mytigap arrester used in terminals of other manufacture 1. Shell, 2. Lock Ring, 3 and 4. Backing Button, 5. Contact Assembly, 6. Insulating Cup. (Compression spring is external to arrester, being contained in terminal protector well.)

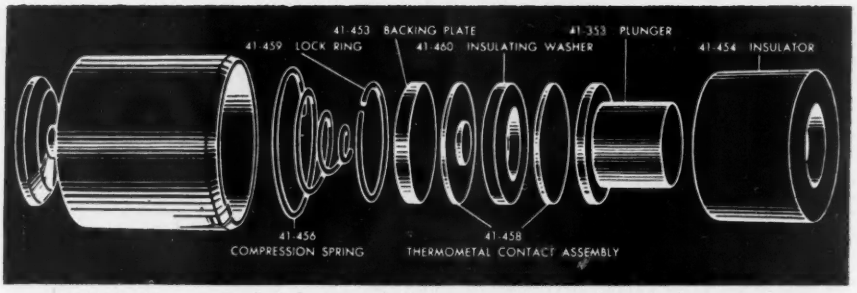


FIGURE 14: —— Exploded view of Mytigap arrester used in Cook terminals.

Telephone Engineer's *Operating Manual No. 1* is one of several operating manuals scheduled for publication in future issues of TELEPHONE ENGINEER & MANAGEMENT. We will be pleased to have your comments and suggestions for future subjects.

If none of the foregoing methods of obtaining a ground connection for the fuseless protector is practical, it will be necessary to place a regular station ground rod in the best available location for good conductivity through the soil.

Also important is a low resistance path from the protector to the ground connection. For fuseless protectors a No. 14 insulated copper ground wire for *each* such protector is employed. Two fuseless protectors in the same location may use a single No. 12 insulated copper ground wire. Fused protectors may use one No. 14 wire for three or one No. 12 for six protectors of this type. For up to 6 fuseless protectors or more than seven fused type protectors one No. 10 insulated copper ground wire may be employed.

If a ground rod must be placed at a station employing fuseless protection, one ground rod should be placed for each fuseless protector installed with a single No. 14 insulated copper wire from each protector to a separate ground rod.

Changes in Protection and Grounding Requirements of The National Electrical Code

AFTER THE article on Fuseless Protection was prepared for the printers, it was learned that the National Electrical Code for 1956, just issued, contains changes in certain requirements for telephone protection and ground at subscriber stations.

Where fuseless type protection is employed, the 1956 edition of the N.S.C. permits this type of protection on other kinds of wire circuits (including open wire and rural distribution wire) than cable with grounded sheath under the following conditions: (a) The station pro-

tector must be of a type approved for this use. (b) The ground lead from the protector must be connected to a water pipe or the grounding conductor or ground rod of a multigrounded neutral system. (c) The connections of the insulated wire to the station protector from the telephone line must be capable of safely fusing at currents below the current carrying capacity of the protector.

The N. S. C. requirements for fuseless protection have also been clarified to bring out the fact that the telephone cable or cable terminal stub must be 24 gauge to permit the use of fuseless protectors in stations connected by insulated wires from a cable with grounded sheath. The original requirement for cable with 24 gauge conducutctors to serve buildings with fuseless type protected terminals is still in force.

It appears that standard drop wire with No. 18 conductors (copperweld or copper plated steel) will meet the current fusing requirement. Connection to a telephone ground rod alone is not permitted for fuseless protection on open-wire or distribution wire circuits.

Conclusion

IN SPITE OF the greater need for adequate grounding and increased ground wire sizes for fuseless protection, the use of fuseless protectors is considered to be an advantage from the standpoint of decreased maintenance and greater safety for employes, subscribers and the public in general.—*John S. Reed.*

General of Calif. Names Hart, Secretary and Attorney

THE PROMOTION of Albert M. Hart, assistant secretary and assistant attorney for General Telephone Co. of California to secretary and attorney was announced last month by Edwin M. Blakeslee, company president.

Mr. Hart assumed his new duties on February 1, and succeeded Marshall K. Taylor, newly appointed director of personnel for General Telephone System in New York City.

A member of General's staff since 1949, Mr. Hart began his career with the telephone company as an assistant attorney. In 1953 he became assistant secretary and assistant attorney and has held these positions until his recent promotion.

Advertisement

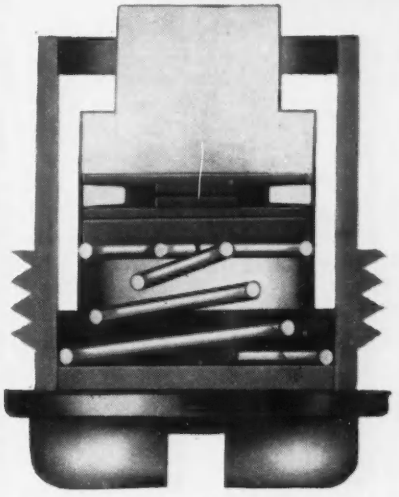
CECOTITE Now Used in LIGHTNING ARRESTERS

41-474
Screw-Type with
Resiliant Electrodes

COOK Electric Company through its extensive research and development activities has produced a new ceramic material known as Cecotite. This material, having extraordinary mechanical, electrical and thermal characteristics has made possible the development of Cook Electric Company's new MYTIGAP series of lightning arresters.

A summary of the properties of Cecotite ceramic shows it to have a hardness approximating that of the diamond. Its complete absence of moisture absorption compares it with glass as an electrical insulator and its thermal shock characteristics are comparable to high heat resistant metal and alloys. Therefore, in applications of extremely high voltage potentials such as lightning arresters are subjected, the above combination of properties makes Cecotite ceramics an ideal insulating material for high potential arresters.

The detailed properties of Cecotite Ceramics are listed as follows:



Sectional view of assembled Mytigap for interchangeable use. Designed for interchangeability with other manufacturers' terminals Part No. 41-474

MECHANICAL PROPERTIES

Compressive Strength (lbs/sq. in.)	90,000
Impact Strength (ft. lbs/sq. in.)	2.1
Tensile Strength (lbs/sq. in.)	12,700
Flexural Strength (lbs/sq. in.)	25,000
Hardness (Moh's scale)	8.0
Specific Gravity (grams/C.C.)	3.7
Water Absorption (%)	NONE

ELECTRICAL PROPERTIES

Dielectric Strength 60 cycle 1/4" thick samples Volts/Mil	240
Loss Factor at 1 MC	0.0120
Dielectric Constant at 1 MC	9.2
Dissipation Factor at 1 MC	0.0013
T_E Value (°C)	700

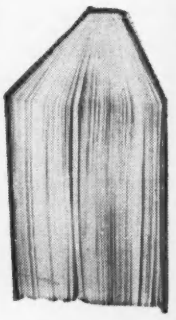
THERMO MECHANICAL PROPERTIES

Softening Temperature °C	1,300
Safe long time operating temperature °C	1,000
Linear Coefficient of Expansion/°C	4.9×10^{-6}
Thermal Conductivity (watts/sq. cm./°C/Cm)	0.050
Resistance to Thermal Shock	GOOD

The principal intent of Mytigap design is to provide a low cost arrester which requires virtually no maintenance. The basis of this design was suggested by the succesful performance characteristics of the automobile spark plug.

For literature, samples, and information contact your nearest distributor or telephone supply salesman.

HOW TO SUPERVISE PEOPLE



Third Edition

This book is simple, easy to read, gives really practical facts of better supervision to use on the job. It covers all the typical jobs and problems of hiring, discipline, preventing accidents, promoting team work, training workers, delegating authority, labor relations, etc. It makes plain helpful techniques for handling them, with examples of typical problems and specific solutions now being used in general practice. Question material that suits the book well for conference training is included. ***By Alfred M. Cooper. 3rd Ed. 254 pp. $4.00***

Telephone Engineer Publishing Corp
7720 Sheridan Road,
CHICAGO 26, ILLINOIS

Just Published

SMALL PLANT MANAGEMENT

Edited by DR. EDWARD H. HEMPEL
Chairman, Small Plant Committee, A.S.M.E.
Prepared under the auspices of
The Management Division of the A.S.M.E.
499 pages, 45 illus., tables and charts, $6.00

Here are the best profit-building ideas of scientific management, made practical especially for the small plant. This authoritative book brings you the advanced management techniques that will help secure a maximum of production at a minimum cost per unit. It thoroughly treats every significant management topic, from the principles of scientific management, to considerations in financial planning—from the laws to be considered in production, to sales tools, and their use—from obtaining real employee morale, to the know-how rules of machine planning . . . analyzing every management function to enable you to establish the most efficient and workable management procedures.

Topics like these fully explain "know-how" management

- process selection and planning
- creating the external organization
- laws and the small plant
- purchasing
- buying, adapting, and making machines and facilities
- the tasks of sales management
- what to consider in financial planning

Order from

Telephone Engineer Pub. Corp.
7720 Sheridan Road Chicago 26, Ill.

EARL LESLIE, chief of operations, General Telephone Co. of Calif. with the Telecomputing tape reader.

New Equipment

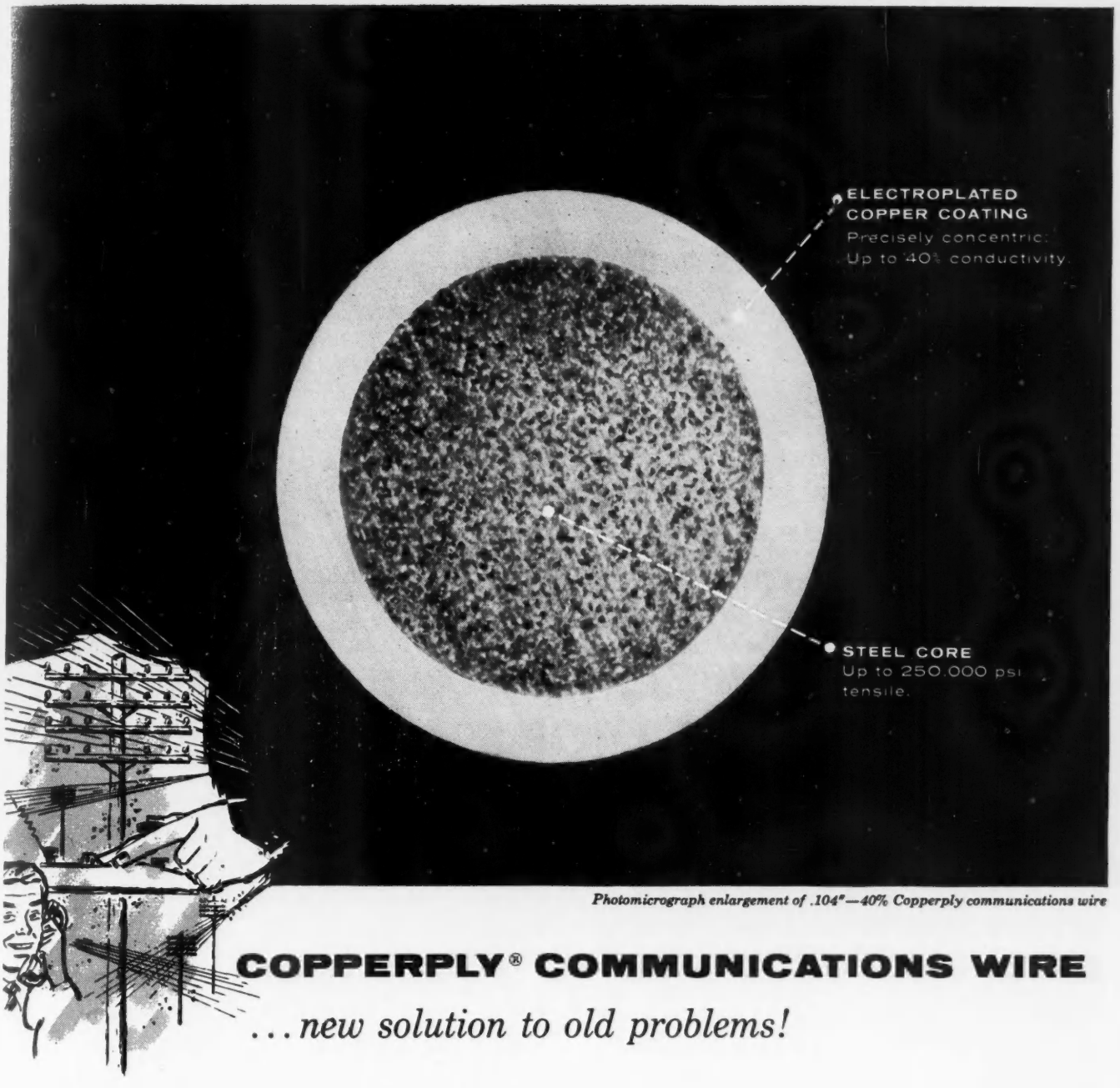
High Speed Toll Ticketing Equipment

A NEW HIGH speed tape to card application for automatic toll ticketing has been developed by Telecomputing Corp., Van Nuys, Calif. The system is comprised of a Telecomputing High Speed Perforated Tape Reader and a standard IBM Card Digitizer. The Tape Reader differs from equipments performing similar functions in that it reads a fixed block of random digits and channels as compared with the single channel capability of other widely used equipments.

The General Telephone System, pioneers in billing automation with its Strowger Automatic Toll Ticketing (SATT), has recently installed this equipment in offices of the General Telephone Co. of Calif. General of California operates a bank of three of these systems and a fourth was previously installed. The SATT services 10 suburban central office systems. From these offices, tapes bearing the necessary identifying and billing information on every area call are delivered daily to the SATT in sealed metal chests. The tapes are converted to message units cards at the rate of over 3 million per month.

Specifically in this telephone bill-

A PORTION of the Automatic Toll Ticketing installation with the tape readers (with the reels) and the IBM Summary Card Punch.



Photomicrograph enlargement of .104"—40% Copperply communications wire

COPPERPLY® COMMUNICATIONS WIRE

. . . new solution to old problems!

● Copperply, with its high strength steel core and concentric rust-proof coating, is ideal for long-span installation. And, it has the decided advantage of versatility to include future carrier circuits without additional line construction. Copperply conforms to ASTM Specification B-227-52 and can be installed in accordance with accepted construction practices.

In insulated wire applications, substantial savings can be realized both in the insulating process and subsequent line installation due to the availability of continuous 600 pound, non-welded lengths.

Your own experience will point to various other applications where the high strength, high conductivity and extreme uniformity of electroplated Copperply will do a better job and save dollars.

We are now producing Copperply communications wire in all standard sizes from No. 3 to No. 12 AWG, with either 30% or 40% conductivity and in both high and extra high strength grades. Check with your distributor, or write to National-Standard.

NATIONAL NS NATIONAL-STANDARD Century NILES, MICHIGAN **STANDARD**

DIVISIONS: NATIONAL-STANDARD, Niles, Mich.; *tire wire, stainless, music spring and plated wires* • **WORCESTER WIRE WORKS, Worcester, Mass.;** *high and low carbon specialty wires*
WAGNER LITHO MACHINERY, Secaucus, N. J.; *metal decorating equipment* • **ATHENIA STEEL, Clifton, N. J.;** *flat, high carbon spring steels* • **REYNOLDS WIRE, Dixon, Ill.;** *industrial wire cloth*

ANYONE CAN INSTALL

FLEXIDUCT

THE FLEXIBLE
FLOOR DUCT

Flexiduct Solves Those Over-the-Floor Wiring Problems Neatly and Easily

NOW . . .
A Brand New
QUARTER ROUND
For Baseboard
Installations
Also Available

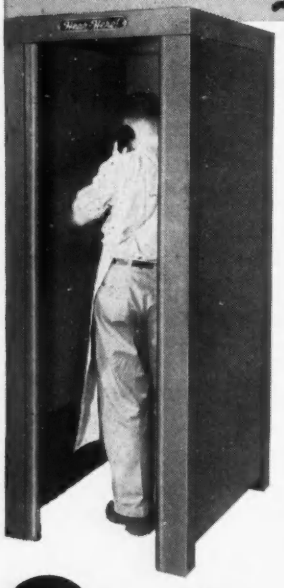
Flexible rubber floor duct that solves over-floor wiring problems quickly and effectively, with adequate protection from sweepers, mops and equipment on casters. Installation is easy and permanent. You just fasten Flexiduct in place with its own special cement. There's no drilling or necessity to use screws or fasteners. Flexiduct's flexibility allows it to adhere evenly and securely to all types of floor surfaces yet it can be taken up without marring floors. For installations ranging from 2 conductors to 25 pair switchboard cables.

Write for Circular 1156-A

BUCKEYE TELEPHONE & SUPPLY CO.

P.O. Box 5707 — Columbus 21, Ohio

Only the Acousti-Booth is *Quiet*



BURGESS-MANNING
"Hear-Here"
Acousti-Booth

Talk and hear on the telephone—in *Effective Quiet*. "HEAR-HERE" Telephone Booths are acoustically corrected to eliminate interfering noises from the shop, office machines, passing trains and other traffic. You feel like you are stepping into another world when you step into a "HEAR-HERE" Acousti-Booth.

And notice!
- **No Doors** — always fresh air
- **No Corners** — to collect dirt
- **No Glass** — to break

There's a model for every type of location.

Performance Guaranteed
Write for Catalog Bulletin

Architectural Products Division of
BURGESS-MANNING COMPANY
5952 Northwest Highway, Chicago 31, Ill.

Manufacturers of 3-Way Functional Ceilings and Acousti-Booths for Telephoning

QUICKLY. . . EASILY. . . AND *ECONOMICALLY* CONVERT YOUR "PICK-UP" TO A MODERN *SERVICE* TRUCK!

Mount Stahl Utility Side Boxes on any make or model of pick-up truck. All-steel, welded, furnished complete with mounting brackets, bolts and instructions. Keep your tools dry, safe, organized. Thousands of pairs in use. *Write today for Literature and Name of Nearest Distributor.*

STAHL— BUILDER OF UTILITY BODIES FOR THE NATION'S BEST-KNOWN UTILITIES.

ing application, the Telecomputing Tape Reader reads every perforation on a 3¾ inch block of tape, which bears all the necessary information to record and bill one call. These "blocks" of tape feed through the system at a rate of over one hundred per minute. As previously indicated, speed is the principal advantage over presently used equipments which read only one digit per tape feed, therefore, is over five times as fast. The Tape Reader will process any predetermined fixed digit length from 18 to 45 characters and any tape width from 5 to 8 channels.

Wire Handbook

A NEW 120-page Manufacturers' Wire Handbook featuring almost 100 types of steel wire is available free from Pittsburgh Steel Co. The handbook, presented in an editorial format for greater readability, contains complete information on wire products made by Pittsburgh Steel Co., and its subsidiary Johnson Steel & Wire Co. Each type of wire is individually described in the handbook and data such as size range, weights, tensile strength and chemical composition is provided. 16 pages are devoted to tables and a hardness conversion chart. A handy glossary describes technical and semi-technical terms used in the well-illustrated handbook.

Florida Independents Meet at Daytona Beach

PARTICIPATING in sessions that featured current trends in telephone service and equipment, 425 telephone industry members registered in at the Daytona Plaza Hotel, Daytona Beach, Fla., for the 49th annual convention of the Florida Telephone Association.

At the opening convention session the representatives of Florida's 23 Independent telephone companies and the Bell System were welcomed to Daytona Beach by Mayor Francis W. Morrison and by Florida Association President Carl D. Brorein, Jr.

Speakers at the first general session were: Foster B. McHenry, USITA vice president, Jefferson City, Mo.; Hugh C. McFarlane, attorney, Peninsular Telephone Co., Tampa, and John F. Childs, vice president Irving Trust Co., New York City.

Financing

DISCUSSING "Methods of Financing Telephone Companies," Mr.

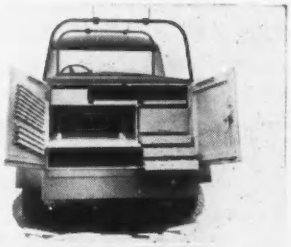
NOW

A TELEPHONE SERVICE BODY . . .

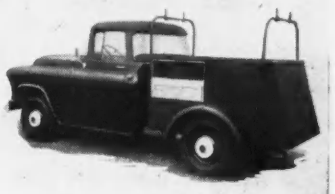
at LOWER COST!

WITH EVERY QUALITY FEATURE FOR CONVENIENCE AND LONG SERVICE LIFE

It's true; Stahl TMI-76 Telephone Service Bodies have the extra costs engineered OUT. Here is a body that has all the space you want, a body that is reinforced at EVERY point of strain, precision welded of auto body steel, yet COSTS YOU LESS!



Available with Ladder Racks and Rear Bumpers, in prime finish or painted to your order.



MADE BY STAHL . . . BUILDER OF QUALITY SERVICE BODIES . . . mounted on your chassis at our plant, or crated and shipped to you at new low shipping cost.

Write for descriptive literature and complete specifications.

TMI-76 . . . FIRST TOP QUALITY TELEPHONE SERVICE BODY AT A PRICE!

STAHL
METAL PRODUCTS, INC.

DIRECTORS of the Florida Telephone Association, *Front Row* (l to r): E. M. MENENDEZ; FRED S. MCGEHEE; MITCHELL N. DREW; JOSEPHINE POPPLETON; CARL D. BROREIN, JR.; HUGH C. MACFARLANE; P. E. BRANNEN, *Back Row* (l to r): M. L. BARRE; OTTO WETTSTEIN, III; J. N. JOHNSON; R. W. SHRINER; BLAIR C. STONE; RALPH MANER; W. A. BROWN; CARL D. BROREIN.

Childs emphasized that it is important not to use bank loans to an excessive degree.

"To avoid such a situation," he said, "break down your total financing program into various pieces of long term security issues. Bank loans can be used prior to the sale of these securities. However, you should plan to repay loans before they reach the maximum amount you might wish to borrow, and well in advance of the final time when they might be paid. In other words don't postpone security financing too long. This procedure preserves flexibility which is so necessary to all types of financing."

Warning that temporary bank loans should not be used to try to outguess the market, Mr. Childs stated that "since no one can accurately forecast interests rates and the stock market, you should do your long term financing when funds are required and accept the prevailing rate at the time."

"The use of short term bank loans pending the sale of long term securities." he said, "may appear to afford a substantial savings. However, it can be shown mathematically, that only a small adverse change in the long term securities market will quickly absorb the temporary savings because the higher cost of long term securities has to be paid for such a long time."

Stressing the importance of favoring local banks "in so far as it is possible for you to do so," Mr. Childs said, "treat them fairly with regard to deposits. Don't force loans on them, but offer them an opportunity to participate."

"However," he added, "be certain that your local banks can take care of your borrowing requirements. If they cannot do so, then you should see if the local banks can arrange to have their correspondents in a large city carry excess loans. If such an arrangement can't be worked out, then you should establish a direct banking connection with a bank in a large financial center. And this means keeping a permanent deposit account with that bank."

Emphasizing that a company should not wait until it needs more money than local banks can handle before making arrangements outside its territory, Mr. Childs suggested that "this should be planned well in advance."

"Otherwise," he said, "you may find yourself a financial cripple without adequate temporary financing facilities available. A regular satisfactory deposit relationship is the only way to be certain that you have borrowing ability."

Discussing interest rates, Mr. Childs said, "Accept the fact that small companies must pay an interest rate above the prime rate."

"One factor which accounts for the higher rate," he said, "is that loans to small companies generally require much more investigation than loans to large companies since large utility companies are so well known. Also the mechanical work required for a small loan is just as great as for a large one."

Pointing out since temporary loans must be paid out of permanent financing, banks are particularly interested in a company's ability to do long term financing. Mr. Childs stated there are basically two types of investors: (1) those who purchase senior securities such as bonds or preferred stocks, and (2) those who purchase common stocks.

"Investors in senior securities want to make certain that the payments they receive are secure," he said. "However, they want more than this. They require that earnings be maintained at an adequate level so that the market price of their securities will not be adversely affected.

"Investors in common stocks are the real owners of the company and they are the ones who take the risk. The common stock investors are by far the most important to consider because unless the common stock is attractive, the underlying security holders will not be protected. They want an adequate return in the form of dividends; but equally important they want some appreciation. The only way to compensate for the risk they take is to offer them prospects of appreciation. Of course, because of the relatively stable nature of utility companies, investors do not expect as much return or appreciation as in more risky industrial companies.

"However, I must stress that even in your more stable field of operation, experienced investors nevertheless expect some prospects for appreciation. How can it be accomplished

in a utility? It can be done by building up book value through plow back of earnings, and then earning adequately on that increased book value. This means a sound dividend policy — not so low so that the investors will be skimped on cash return, but not so high as to prevent reasonable appreciation."

Referring to the fact that small companies face special problems in financing because of their size, Mr. Childs stated that interest rates are bound to be higher and there is a minimum size in which institutional investors would be interested.

"Unfortunately" he said, "some telephone companies have experienced a vicious circle which proceeds along these lines:

"(1) Unusually large amounts of capital must be raised to provide for rapid growth in demand and to upgrade existing service, as well as to modernize old plants. Capital expenditures per station are now many times existing manual systems."

"(2) Difficulty in financing is encountered because of (a) inadequate earnings, and (b) weak financial position because of too high debt.

"(3) Customer illwill has developed because of inadequate service.

"(4) The commission may be reluctant to grant an adequate rate increase because of the poor public relations of the company. As a consequence the company can't raise adequate capital.

"And so around and around in the vicious circle. The company blames the commission for inadequate earnings and the commission blames the company for having such poor public relations. Nothing can be gained by going back and trying to assess the blame. But how should it be prevented in the future?"

In answer to his question, Mr. Childs reviewed the importance of *adequate financial planning.*

"Adequate planning is absolutely essential," he said. "I have observed a definite tendency in the small telephone field to try to meet each financial crisis as it arises, emit a sigh of relief when it is over, and then relax until the next crisis appears. Financing plans should be outlined at least three years in advance and preferably five. Granted, those plans may be quite indefinite but they will point out problems well in advance. They should be revised and reviewed each year and extended for another year. Such plans should include earnings forecasts in so far as possible, to show what earnings hurdles may have to be encountered. That is how large well managed utility companies handle their affairs and there is no reason why a small company should not follow such a procedure."

MARSHALL TAYLOR, New Haven, Conn., and HANS KRAEPELIEN, Galion, Ohio, present winners with their prizes at Florida Convention, MRS. MITCHELL DREW, Quincy, won the "Ericophone."

Emphasizing that a strong financial position must be maintained, Mr. Childs said, "every company is bound sometimes to run into trouble and experience inadequate earnings."

"However," he said, "it still must be in a position to do some form of financing. Under such circumstances, the only type of financing that it can probably do is to sell debt. This in turn means that it should maintain a sufficiently low debt ratio on the average so that it can issue debt under adverse conditions without hurting its credit standing. This is what is referred to as 'borrowing reserve.'

"Borrowing reserve is necessary because a utility company must be in a position to raise new capital even though it also faces a large debt maturity or it encounters adverse conditions in the security market, adverse general business conditions, adverse conditions in the industry, and adverse conditions for the particular company . . . . "

Florida Conferences

RICHARD O. LILE, Florida traffic supervisor, Southern Bell Telephone & Telegraph Co., Jacksonville, presided at the convention's Traffic Conference. Speakers were H. Alton Steele, district traffic superintendent, Peninsular Telephone Co., Lakeland; R. W. Williams, Florida force requirements supervisor, Southern Bell Telephone & Telegraph Co., Jacksonville; and Mrs. Francis Hill, Florida instructor, Southern Bell Telephone & Telegraph Co., Jacksonville.

W. B. Crays, general plant manager, Inter-County Telephone & Telegraph Co., Fort Meyers, presided at the Commercial and Plant Conference. Speakers were: E. A. McKee, division plant manager, Southeastern Telephone Co., Tallahassee; D. H. Hibbard, special studies engineer, Southern Bell Telephone & Telegraph Co., Jacksonville; and N. M. Shenk, commercial manager, Peninsular Telephone Co., Tampa.

"The Youth You Supervise"

STRESSING that the telephone industry depends on and employs many youths, Mr. Steele stated that it is important to take advantage of the assets of youth and understand the problems in dealing with youth.

"Stating that the young employe must be "Started off right," Mr. Steele suggested:

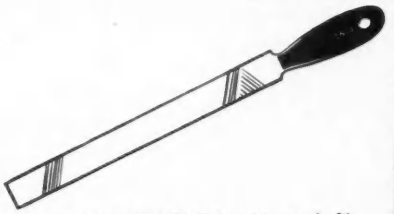
"(1) Be friendly — new people are usually scared and friendliness relieves the tension.

"(2) Remember what a great change it was to start out on your first job.

"(3) Take time to tell them about the working quarters and practices.

"(4) Remember — even our lan-

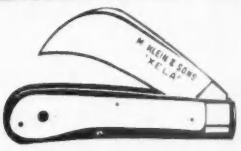
are you a "SMART



CARSON-NEWTON lineman's file

KLEIN climber gaff guard

STANLEY screwdriver



KLEIN lineman's knife

KLEIN round-nose side-cutting pliers

KLEIN single plier pocket

AUTOMATIC ELECTRIC

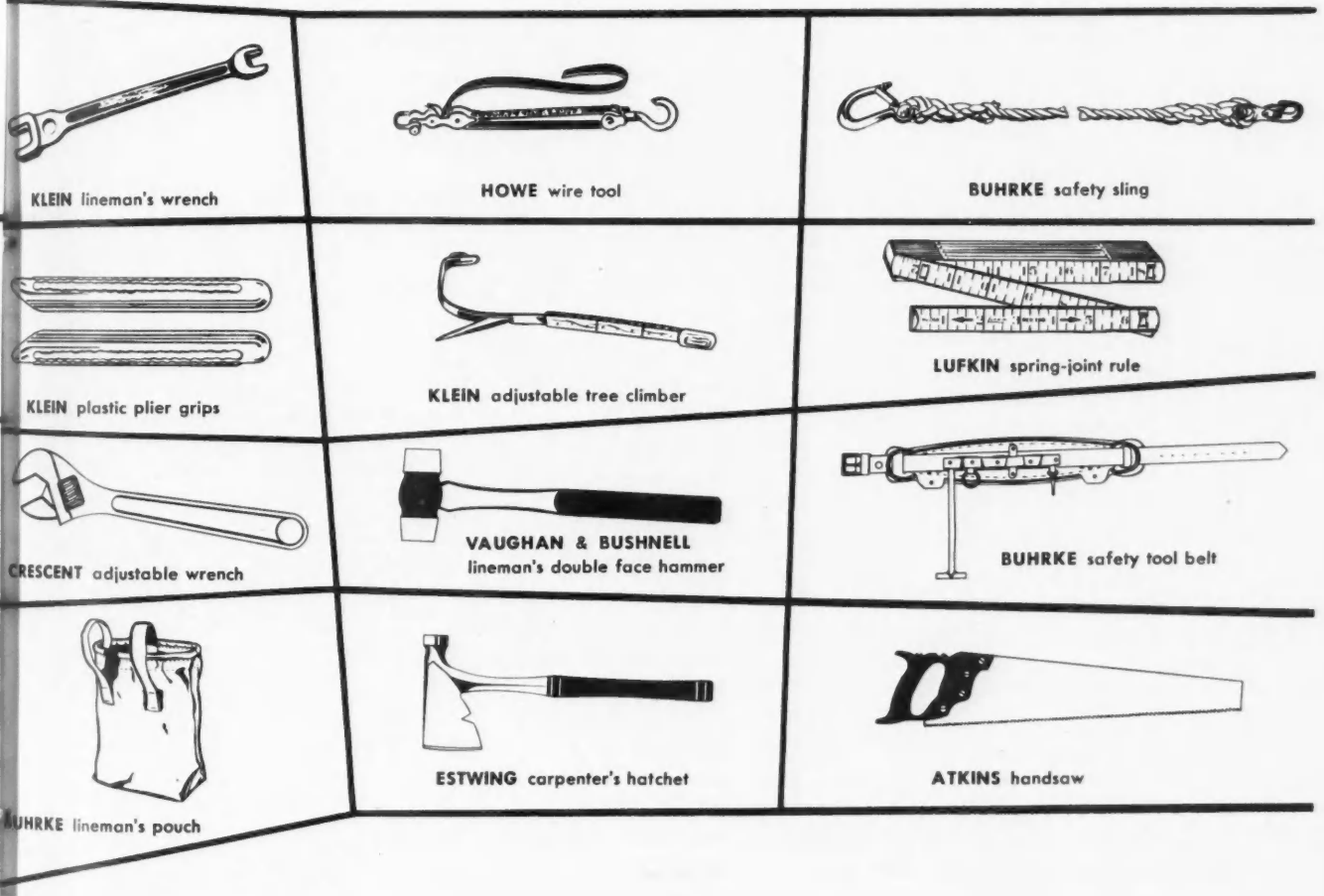
ORIGINATORS OF THE DIAL TELEPHONE

RTCOOKIE" when it comes to TOOLS?

Then you'll like Automatic Electric's Supply Service! At Automatic, you get famous, proved-dependable brands you can count on for high quality and long-run economy. What's more, you get speedy service from the nearest of our five conveniently-located warehouses.

You can order any of the fine tools shown below (and hundreds more!) by calling your Automatic Electric representative or your nearest Automatic Electric Sales Corporation warehouse. Why not do it...*today?*

Look at all these famous brands!



AUTOMATIC'S **5** FRIENDLY WAREHOUSES:

George Ferguson, Mgr. 1033 W. Van Buren St. Chicago 7, Illinois HAymarket 1-4300	"Michie" Hester, Mgr. 2915 Moore St. Richmond 21, Va. Tel. 6-9280	Ed. J. Chok, Mgr. 2360 N. W. Quimby St. Portland 10, Oregon CApital 3-7244	Fran Batcher, Mgr. 158 Corliss Avenue Johnson City, N. Y. Binghamton 7-8507	Gene Martin, Mgr. 2021 Main St. Kansas City 8, Mo. HArrison 1-4720

FLORIDA BANQUET GUESTS (l. to r.): MR. and MRS. BLAIR STONE, Tallahassee; MR. and MRS. MITCHELL N. DREW, Quincy; RAY W. SMITH, Chicago; FOSTER McHENRY, Jefferson City, Mo.; and MR. and MRS. D. B. WHITE, Myrtle Beach, S. C.

guage is new to them. (Words like traffic, trunk, SA mean nothing to them.)

"(5) Make it easy for them to ask questions.

"(6) Encourage them to think about what they are doing.

"(7) Set a good example.

"(8) Stress the 'We' and make them feel they belong.

"(9) Teach them about the company organization and policies and show them how they're needed as a part of the team.

"(10) Encourage a suitable atmosphere among all employes.

"(11) Help them develop a good sense of values by teaching them that social interests must not interfere with the job.

"(12) Help them set goals and reach them.

"(13) Praise them when their work merits it.

"(14) Try to develop good attitudes — bad attitudes cause more job failures than inability does.

"(15) Remember attitudes are caught — not taught."

"Utopia 2-1234"

TELLING his audience that "Your New Number will be UTopia 2-1234," Mr. Shenk stated. "The UTopia prefix has no special purpose, unless to connote a state of being which should prevail for all telephone people when all telephone numbers are finally changed."

Mr. Shenk said in changing to a dial system which includes letters, "sell the people" as much as possible as far ahead of time as possible. He said businesses should be notified a year ahead of time so they "can use up their stationary stock."

He said, in his opinion, using a central office name which has community meaning or relationship isn't a good idea because similar requests from other areas and communities which can't be granted create hard feelings. He said his opinion wasn't shared by all telephone people, for example, "Ringing exchange used in Sarasota."

He also said using "L" and "O" in the first two letters of the exchange name isn't good because they are confused with one and zero when dialing.

"No matter how much publicity you give to a dial exchange," Shenk concluded, "You'll still get thousands of wrong numbers the first few days. People just have to change their habits, of dialing."

The final convention speaker was Harold Colee, Jacksonville, executive vice president of the Florida State C. of C. Colee said there are some 1,216,000 telephones in the state. "Of Southern states, only Texas has more telephones in use than Florida."

Speaking on Florida's advancing economy, Mr. Colee said urban areas are taking the brunt of the state's fast population growth and need the support of the "back country" in conserving the state's natural resources.

M. N. Drew Elected Pres.

IN BUSINESS sessions, the Florida association elected: M. N. Drew, Quincy, president; J. L. Sharit, Port St. Joe, first vice president; Fred S. McGehee, second vice president; and reelected Miss Josephine Poppleton, secretary treasurer. The board of directors also was reelected.

The officers and directors of the association passed a resolution recommending state legislation to permit telephone companies to be reimbursed by the federal government when lines and poles must be removed to make way for highways.

Under federal law, companies may be reimbursed only if state legislation permits. The resolution will be studied by a special association committee. — *Prepared from data submitted by Miss Josephine Poppleton, secretary-treasurer, Florida Telephone Association.*

Book Review

"Handbook of Electronic Measurements," edited by Moe Wind; published by Polytechnic Institute of Brooklyn, 99 Livingston St., Brooklyn, N. Y.; two volumes; $15.00 *per volume.*

An authoritative handbook of electronic measurements, designed to fill the critical need for concise and complete sources of information in the field of electrical engineering was published recently by the Microwave Research Institute of the Polytechnic Institute of Brooklyn.

Written in 18 chapters by 17 authorities eminent in the field for their work on the topics assigned to them, the handbook is in two volumes totaling 879 pages.

The *"Handbook Of Electronic Measurements"* offers up-to-date, conveniently collated information on electronic measurements and combines basic exposition with practical information. It presents a compendium of measurement methods, categorized according to frequency, from D. C. through the microwave region. Complete descriptions and illustrations of necessary equipment are given and orders of accuracy and physical magnitude indicated.

Korean Technician To Study at Warsaw, Ind.

WON SON KANG of Seoul, Korea, one of nine Korean telephone technicians selected by his government to study American telephone equipment and operations, arrived recently at Warsaw, Indiana, for a stay of approximately three months with United Telephone Co. of Indiana, Inc.

Mr. Kang's study at Warsaw is part of the one year's training he will receive in the United States under a project of the International Cooperation Administration of the Federal

WON SON KANG visits United Tel. Co. at Warsaw, Ind.

Communications Commission. The project is designed to assist the Republic of Korea in the rehabilitation of its war-torn country.

Mr. Kang, who speaks very little English, has been in America approximately one month. Prior to his Warsaw assignment, he received a three-week indoctrination course in Washington, D. C. While there, he was afforded the opportunity of visiting the Capitol Building, the Supreme Court, Howard University, Arlington Cemetery, Mount Vernon, and other points of national interest.

He is 34 years of age, married, and the father of two daughters. He received his higher education at Communications College in Tokyo, Japan, and has worked for 12 years in his country's telephone industry at Seoul, most extensively as a cable and toll line engineer. During the recent Korean conflict, Mr. Kang moved his family to safety in Pusan while he remained in Seoul as a communications engineer for the ROK army.

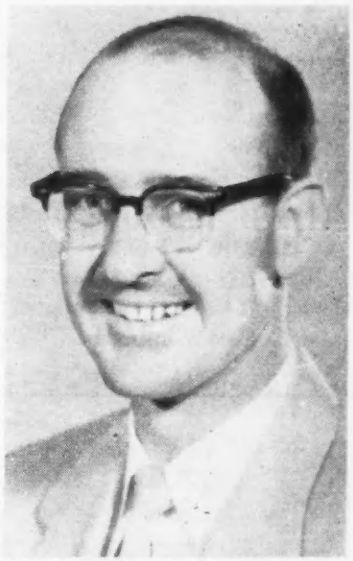
Mr. Kang is slated to receive United Telephone Co. training in all phases of "medium-sized exchange operation" with emphasis upon the installation and maintenance of dial offices and long distance carrier circuit equipment.

Warsaw is the headquarters for United Telephone Co. of Ind., Inc., Ohio Telephone Service Co., and Jasper Telephone Corp., representing a total of 96 exchanges, many of which are of the size which may be expected to be established in Korea.

Douglas Dimmitt Joins General of Northwest

DOUGLAS C. DIMMITT has been appointed chief engineer of General Telephone Co. of the Northwest. Mr. Dimmitt has been transferred to the Northwest company from General Telephone Co. of Calif., where he had been associated with the engineering department since 1948.

An engineering graduate of the University of Southern California, Mr. Dimmitt held a commission as first lieutenant in the Army Air



DOUGLAS DIMMITT joins General Tel. Co. of the Northwest.

Corps in the European Theatre during World War II.

Mr. Dimmitt succeeds Roy Worley, who has been appointed general equipment engineer of General Telephone Co. of Ohio and of Ohio Consolidated Telephone Co. Howard Duhamel, who previously had been general equipment engineer in the Ohio companies, has joined the Automatic Electric Co., Chicago, as a senior project engineer.

Newport Telephone Co. Granted New Rates

THE NEW YORK Public Service Commission has accepted a tariff amendment filed by Newport Telephone Company, Inc., designed to increase rates to its subscribers by an estimated $10,800 annually. The company serves about 1,500 telephone stations in a 150-square mile area comprising portions of Herkim-

er, Hamilton, Fulton and Oneida counties through relay type dial offices in Newport, Poland and Middleville, N. Y.

In filing its new tariff, the company reported that it had granted a wage increase to employes and that additional revenues were needed to enable it to absorb that expense as well as other higher operating costs and still be able to render adequate service and earn a profit on its investment.

The new tariff provides for increases of 50 cents monthly for five-party, rural and multiparty residential service, 75 cents monthly for two-party residential service and $1.00 for individual residential service. Business rates are increased by $1.00 monthly for party lines and by $1.50 monthly for individual lines. The new rates became effective on January 1.

General of S. W. Announces Record Construction Budget

A RECORD 1957 construction budget of $14,200,000 for General Telephone Co. of the Southwest was announced last month. The 1957 budget is a 20 per cent increase over the 1956 budget.

W. G. Wright, president of the company, said the largest expenditure will be for outside plant — poles, cable and wire — to extend the companies facilities in the 233 exchanges in which it operates. About $5,500,000 is earmarked for this purpose.

Approximately $4,300,000 is budgeted for central office equipment, $2,800,000 for station equipment, $1,100,00 for land and buildings, and $190,000 for vehicles and furniture.

Wright pointed out that the company will convert 25 of its exchanges to dial operation during the year, will establish three new exchanges, and will replace equipment in eight other exchanges. At the end of 1957, 83 percent of the company's telephones will be dial operated. Anticipated gain in telephones for 1957 is 15,500.

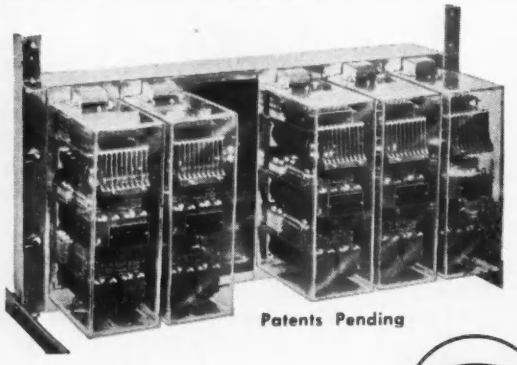
General Telephone Co. of the Southwest operates 195,000 telephones in Texas, New Mexico, Oklahoma, Arkansas and Louisiana and is the largest Independent (non-Bell) telephone company in the Southwest.

Considering construction budgets of the Texas Telephone Co. and Oklahoma Telephone Co. (other General System companies), the total construction budget for all three General Telephone System companies in the Southwest is $18,400,000.

Valley Tel. Co. Buys Oregon Cooperative

SALE OF the Santiam Cooperative Telephone Co., Mill City, Ore., to the Valley Telephone Co., Silverton, Ore., has been announced. Valley Telephone, headed by Lowell Brown who is slated to head the merged companies, stated that plans call for installation of a dial system in the Mill City-Gates area, formerly serviced by the Santiam Cooperative, in about a year.

Robert Veness, president of the Santiam cooperative for several years, announced his retirement. Named to succeed him until the sale is effective was D. B. Hill, Mill City. Joe Bowes of Gates was named vice president; Mrs. Edith Mason, Mill City, will serve as secretary; and Herbert Schroeder, Mill City was named treasurer until the new company takes over.


Patents Pending

INDEPENDENT

• **CODE-TO-SELECTIVE CONVERTERS**

Provides 10-party selective ringing. Use with present equipment.

Ask for Bulletin No. 554

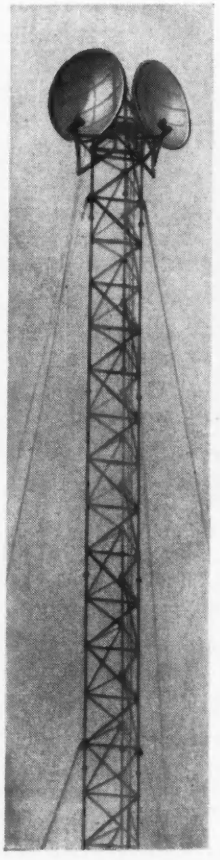
• **DIGIT ABSORBERS**

For converting switchboards into full 2-5 numbering.

Ask for Bulletin No. 555

UNIVERSAL CONTROLS CORPORATION

P. O. Box #13122, Walnut Hill Sta., DALLAS 20, TEXAS



S-C STROMBERG-CARLSON

Unusual Opportunity for

TEST ENGINEERS

Carrier and Microwave Experience

Experience in maintenance of carrier and microwave installations desirable.

We offer an unparalleled opportunity for rapid advancement in one of the fastest growing companies in the communications industry. And you'll like living in Rochester—a city of fine homes, superb schools, vast facilities for leisure-time activities.

Immediate openings in Quality Control Dept. Other opportunities for electrical engineers in production engineering.

For immediate interview send letter or resumé to R. E. Golemb, *Quality Control Manager, Telecommunication Division.*

STROMBERG-CARLSON

A DIVISION OF GENERAL DYNAMICS CORPORATION

Rochester 3, N. Y.

LOOK TO THE LEADER...

for
- RELIABILITY
- SERVICE
- NATIONALLY KNOWN TELEPHONE SUPPLIES

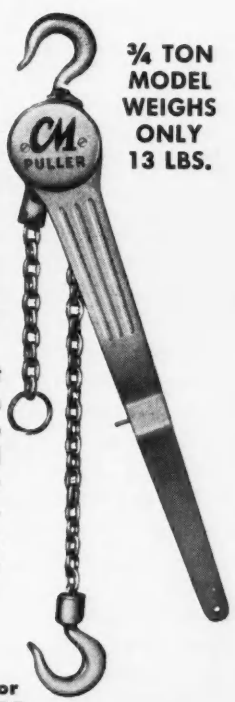
Prompt delivery of your order as specified is assured by Lindsay's fast, efficient, personalized service. Lindsay specializes in telephone supplies *only* . . . warehousing a complete line of the finest nationally known brands . . . your guarantee of the best as you want it . . . when you want it.

LOOK TO LINDSAY

THE LINDSAY TELEPHONE SUPPLY CO., *Est. 1939*
10409 Meech Ave., Cleveland 5, Ohio • Telephone Diamond 1-9212

THOUSANDS IN USE...

tightening guys and doing hundreds of lifting, pulling and binding jobs safely and efficiently



¾ TON MODEL WEIGHS ONLY 13 LBS.

CM PULLER

● Operated by a rachet handle requiring no more effort than an automobile jack. Objects up to 12,000 lbs. can be lifted or pulled . . . vertically, horizontally or at any angle. Anyone can operate. Automatic brake holds loads at any point. Inexpensive. Sturdy. Safe. CM-Alloy flexible welded load chain.

Send for PULLER Literature Illustrated and with prices.

Capacities: ¾ to 6 ton

CM HOISTS AND CHAIN

CHISHOLM-MOORE HOIST DIVISION
COLUMBUS McKINNON CHAIN CORPORATION
TONAWANDA, NEW YORK
DISTRICT OFFICES: NEW YORK, CHICAGO, CLEVELAND
In Canada: McKinnon Columbus Chain Limited, St. Catharines, Ontario

READ BOTH AC AND DC with TONG TEST Ammeters

Only Tong Test measures both alternating and direct current. Simply snap the tongs around electrical conductor for instant readings . . . only one scale to read at a time. Ranges up to 1000 amperes are quickly interchangeable, cannot burn out for there are no windings.

Lightweight, accurate, safe, dependable . . . Columbia Tong Test is available in five types to accommodate conductors up to 3⅞" diameter, or bus bars up to 4½" x ½"

6498-CE

COLUMBIA

COLUMBIA ELECTRIC MFG. CO.
4567 Hamilton Avenue, Cleveland 14, Ohio

L. M. BERRY & CO. managers and supervisors meet at Dayton, Ohio. First row (l. to r.): N. E. ROBINSON, Ohio division manager; H. C. HULL, statistician; J. W. CRAIG, JR., general sales supervisor; J. D. BECKHAM, Mississippi division manager. Second row (l. to r.): W. J. McGIRL, Southern sales manager; J. P. WHITE, Southern manager; R. A. MANER, Florida division manager; F. L. HAWKER, Eastern manager; LOREN M. BERRY; JOHN W. BERRY, general sales manager; W. A. STEUER, general manager; H. F. SCOTT, Mid-Western manager; J. F. ALLEN, directory engineer; L. E. GETZLER, Eastern sales manager. Third row (l. to r.): J. E. WHALEN, Wisconsin division supervisor; S. H. RAINEY, general sales training supervisor; W. L. WOLCOTT, personnel and training director; M. F. FEENEY, Alabama division manager; C. S. AUCOIN, Louisiana division administrative supervisor; H. C. EVANS, Mid-Western division manager; S. E. PHILLIPS, staff assistant (Mid-Western territory); B. D. ADDINGTON, Mid-Eastern division manager; J. W. NAGEL, New York division manager; J. M. BAYLEY, Tennessee division manager; R. T. DAVIS, Pennsylvania division manager; W. C. WELCH, Kentucky division manager; R. W. ALEFF, Wisconsin division sales supervisor; E. F. TINNERMAN, Wisconsin division manager; PHIL ENGLE, general art director; J. A. WALSH, Mid-Eastern division supervisor. Fourth row (l. to r.): J. W. EGNOR, staff assistant; R. J. BURKE, general art supervisor; J. J. MULLIN, personnel methods supervisor; R. E. SHEARER, general sales assistant; J. P. FRAIM; E. W. BEANEY, New York division supervisor; H. L. BOEBEL, Tennessee division supervisor; J. B. BOWEN, Kentucky division supervisor; C. P. WORLEY, Mississippi division supervisor; J. C. GRIMES, Ohio division supervisor; K. R. JEFFERS, Western division manager; L. E. HURRELBRINK, Alabama division supervisor; J. L. BOWLING, Florida division supervisor, R. W. BRUNDIGE, sales promotion manager.

Directory Advertising Conference

Berry Managers & Supervisors Meet

"REVIEW, Revalue, and Revise," L. M. Berry & Company's theme for 1957 set the mood for a four-day Directory Advertising Conference held in Dayton, Ohio on December 3, 4, 5, and 6.

Forty-four managers and supervisors representing 13 divisions and three territories were on hand to hear John W. Berry, general sales manager, review the company's accomplishments of 1956, and outline the sales efforts for the forthcoming year. Opening the annual conference with an explanation of the 1957 theme, which was carried out in a back-to-school motif symbolized by the "3 R's," Mr. Berry stressed the need to revalue present market conditions in the light of today's economy, and to revise attitudes in performance of the directory job in terms of increased revenue and increased value to advertisers.

Also highlighting the meeting was the introduction of a newly-developed supervisory training course, which will be given to all line supervisors early in the coming year. The course was presented in condensed form to the conferees as a guide to follow-up training in the field, it was explained. Main topics discussed in the new course were "Management Basics," which dealt with the principles of leadership that directory supervisors must know and practice, and "The Line Supervisor's Job," which included a detailed description of the canvass manager's tasks and responsibilities.

In addition, the conferees heard the details of a coordinated sales training program which was inaugurated by the company early in 1956. Covered in this discussion by General Sales Training Supervisor S. H. Rainey were the subjects presented in the classroom; methods of instruction, and the coordination between various departments in presenting the subject matter. Also emphasized was the role of management in the follow-up training of new sales personnel.

Personnel and Training Director W. L. Wolcott reviewed the personnel job carried out by the company in 1956, and made recommendations for the selection of applicants for sales work. He also introduced a new personnel service recognition plan, which will provide special recognition for employes who have specified tenures of service, and a vacation pay allowance plan for non-salaried and semi-salaried personnel. This discussion was followed by a talk on personnel methods and detail instruction by Personnel Methods Supervisor J. J. Mullin, who outlined the structure of the company's detail organization, and explained the purpose and scope of office procedure.

General Sales Supervisor J. Wm. Craig, Jr. then presented a detailed

nalysis of some 1956 sales results which included a comparison of revenue renewal as it applied to specific canvasses and individual sales performance. Emphasizing the importance of renewals in securing quotas, Mr. Craig pointed out that revenue from this source will play a major role in the attainment of 1957 objectives.

Directory Engineer J. F. Allen followed this talk with description of a forthcoming national Yellow Pages promotion campaign in April, then gave a report on the observations made by him while visiting the field.

Company sales promotion was discussed by Sales Promotion Manager R. W. Brundige, who reviewed the job as it was carried out in the field during the year, and outlined the program for 1957. He revealed that the company's incentive contest, which provides merchandise prizes for sales personnel who meet certain objectives, has been expanded to include awards to art and clerical personnel.

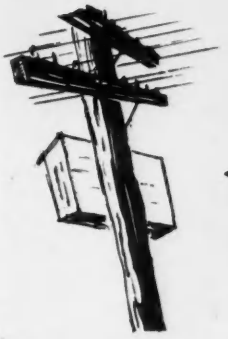
In a discussion of telephone sales, General Sales Assistant R. E. Shearer presented an analysis which emphasized complete and proper coverage.

During a discussion on art, General Art Director Phil Engle introduced a new booklet, "Spec Copy Basics," which was produced by the General Art Department. He explained that the booklet was designed to provide directory advertising salesmen with a better knowledge of the fundamentals of layout composition as it applies to the Yellow Pages.

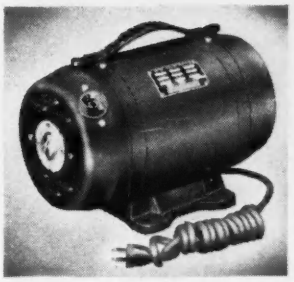
General Sales Manager Berry wound up the conference with a talk on management, in which he covered the qualifications, responsibilities, and duties of managers. Included under this topic were Mr. Berry's recommendations for field organization.

At the close of the four-day meeting, Loren M. Berry paid tribute to the members of the General Sales Staff who presented the conference. He then correlated the growth of the company with the quality of its service to telephone customers, and expressed confidence of future growth upon the same basis.

This year's conference, according to John W. Berry, was the largest and in many ways, the most successful one ever held in L. M. Berry and Company's 46-year history.



What's YOUR EMERGENCY STANDBY POWER PROBLEM?



Here and now, you may be face to face to a practical solution for your communications power problems. For years CARTER dynamotors, genemotors and converters have been used by ALL major builders of mobile radio-radar equipment . . . the kind most used in land, sea and air transportation, in mining, pipe lines, utility, forestry and geophysical applications.

We invite your inquiry. Our engineering department will give you technically qualified help in selecting, adapting, or developing a CARTER ROTARY POWER SUPPLY to meet your needs. Address your inquiry to Ray Simon, Chief Engineer, Carter Motor Co., 2710 W. George St., Chicago 18. Or mail coupon.

ROTARY Carter POWER

Carter Motor Co. 2710 W. George St. Chicago 18
Attn: Ray Simon, Chief Engineer

☐ Attached is information about our communications power problem. Please suggest your solution.
☐ Send sales literature and prices on Carter Dynamotors and Converters.

Name_____

Firm_____

Address_____

GENERAL MACHINE PRODUCTS COMPANY, INC.
7th & Wood Sts.
Philadelphia 6, Pa.

Aerial Tents
Cable Benders
Cable Blocks
Cable Lashers
Coaxial Cable Tools
Lashing Wire Clamps and Grips
Portable & Power Reels

MUD BUCKET #G100
Patent No. 2,628,121

The MUD BUCKET is the answer to the utility man's problem when the going is tough. Eliminating the makeshift lard cans, buckets or other receptacles which have to be used whenever water, mud or slush are encountered. Made of sturdy aluminum, the MUD BUCKET has mechanical steel bushing on all pivot points. Tested under the most severe conditions and has proved to be durable and long lived.

Handles	8 ft.
Bucket Capacity	5 Qts. liquid measure
Overall length	9 ft. 1 in.
Weight	8 lbs. 4 oz.

Distributed by Graybar

Special Purpose Tools To Specifications
Literature on Request

Over 450 various items of Line Construction Tools, Maintenance & Pressure-Testing Equipment in stock for immediate Shipment

SPECIALIZED COMMUNICATIONS EQUIPMENT SINCE 1918

GMPCO

construction and maintenance DIGEST

- **Lead in reserve**
- **Save up to 99¢**
- **25-year proof**
- **Dependable ringing**

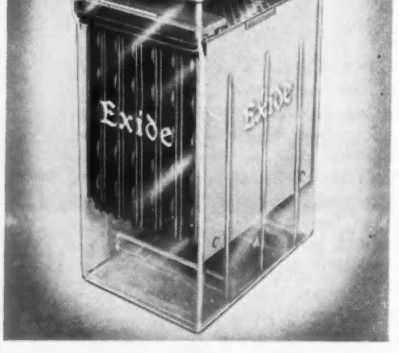
Published regularly to help you get the most out of your materials and supplies dollar

by Joseph W. Mullin, Inside Sales—Kansas City

My pet hobby is photography. Maybe you've noticed yourself—a double exposure can be mighty interesting. For instance, when you order supplies from Stromberg-Carlson you see **two** big benefits in the picture. One, you get fine products with a two-fold guarantee—ours and the maker's. The guarantee is backed by our 62-year reputation. And here's the other. Your support gives the science of telephony a push forward. As you know, this industry is a full-time job with us. Your supply orders help us continue research for new and better telephone equipment. So we say a heartfelt "thanks"—it's a pleasure to serve your supply needs.

Reserve lead keeps battery young

Inside the unique lead buttons in an Exide-Manchex positive plate there's a coil of reserve lead designed to prolong battery life. Over the years, as this lead is needed, it goes into action, instantly and automatically.

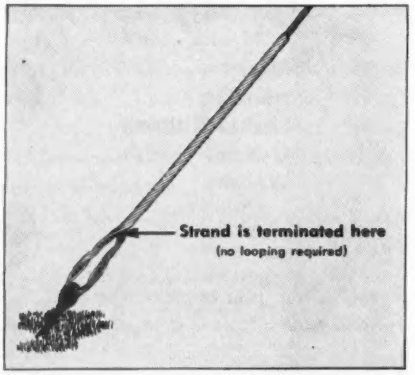


The unique thing about Exide-Manchex construction is that the reserve lead does not have to support the plate. The spiral lead buttons are tightly locked into a cast lead-antimony alloy grid several times more rigid than pure lead. Hence the reserve lead can be completely consumed while the plate retains its strength.

Only Exide-Manchex Batteries have this construction. In addition, they feature a plastic jar that saves weight and space, high level electrolyte for less frequent filling, and huge bottom reservoir that virtually insures against sediment shorts.

You save up to 99c on each guy strand

Save as much as 99c per guy strand with Preformed Guy-Grip dead-ends—the safe, low-cost way of dead-ending guy wires.



Install PLP Guy-Grip dead-ends quickly and easily by hand.

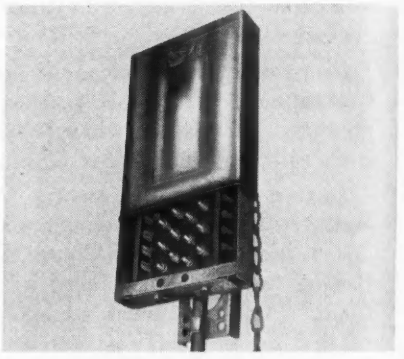
Since each PLP Guy-Grip dead-end provides its own loop-eye, you don't need clamps, clips or loops, and you need less strand. Yet these Guy-Grip dead-ends hold the full-rated strength of *even* extra high strength steel strand.

You enjoy a substantial saving in installation time because the job is easily accomplished by hand, and most of the application can be done on the ground.

PLP Guy-Grip dead-ends can be applied either to the cut end or the coiled end of the strand, which means you can cut the strand to proper length after application of the Guy-Grip dead-end.

Time-Tested, Time-Proved

More than 25 years of use have brought world-wide acceptance of the Cook XB Unprotected Cable Terminal for high insulation characteristics and wiring convenience.



Available in 6, 11, 16 or 26 pairs with or without lead stub.

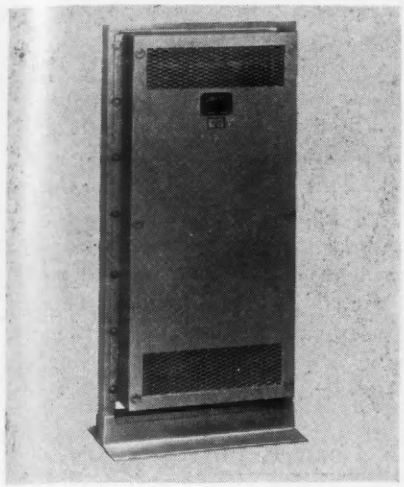
Some of the features of this terminal are heavy steel terminal box and bracket, galvanized to prevent rusting; close-fitting reversible hood of heavy sheet zinc; non-corroding Everdur studs deeply embedded in a patented one-piece Bakelite face plate; and raised stud mountings. Cook Electric Company can furnish this terminal with a detachable mounting bracket.

For intensely corrosive atmosphere and resistance to salt spray the XB Terminal is available with all metal parts made of silicon bronze.

Easy way to generate synchromonic ringing frequencies

Here's a dependable, dollar-saving way to generate frequencies

for synchromonic ringing systems—
15, 20, 30, 42, 54 and 66 cycles.



Model S-5 can be equipped to supply either 15 or 20 cycles as the fifth frequency, in addition to 30, 42, 54 and 66 cycles.

With no moving parts, the Lorain S-5 Sub-Cycle needs no lubrication or maintenance attention, once installed.

It uses a unique conversion principle, combined with basic sub-cycle circuits, for producing the output frequencies you need. An important feature of this principle is that output frequencies are actually locked to AC line frequency, using a definite ratio. Thus you get precisely accurate ringing frequencies.

You also get exceptional voltage regulation on all five ringing frequencies. This is an important factor in the elimination of cross-ring in multi-frequency ringing systems. The output voltages are substantially independent of input voltage variations or load conditions on other ringing frequencies.

For maintenance-free, truly reliable conversion to synchromonic frequencies, ask your Stromberg-Carlson representative about the Lorain S-5 Sub-Cycle.

Distributed by

STROMBERG-CARLSON

A DIVISION OF GENERAL DYNAMICS CORPORATION

Sales Offices: Atlanta 6, Chicago 6, Kansas City 8, Rochester 3, San Francisco

THE NEW REMINGTON RAND Customer Service Counter recently installed at Central Telephone Co., Mt. Airy, N. C., has desk and filing space built into it enabling cashiers to remain seated, and wait on subscribers from their desks. Work space behind the counter is designed for efficiency as well as comfort, with file drawers within easy reach of the desk surfaces.

Oklahoma Commission Denies Western Tel. Rate Boost

A RATE INCREASE application by Western Light & Telephone Co. for 16 towns and cities was rejected last month by the Oklahoma Corporation Commission.

Ray C. Jones, commission chairman, said the rate hike was denied because the commission did not feel that the type of service being offered justified the proposed rates. Only two of the 16 areas served have magneto service, the remainder using common battery service, Jones said. None have dial equipment.

Consolidated Tel. Co. Program Approved By Commission

CONSOLIDATED Telephone Co., Florence, Ky., has received authority to proceed immediately with a plan to finance its $765,000 improvement and expansion program. The Kentucky Public Service Commission also authorized Consolidated to raise rates provided the separate phases of the construction program are completed within a reasonable time. The higher rates would yield $73,000 in added revenues annually.

The firm had asked for authorization to convert its Burlington and Walton exchanges to the dial system and to build additional facilities at its exchanges in Hebron, Union, and Florence.

Consolidated requested and was granted the following authorizations for financing the buiding program:

(1) To borrow not more than $500,000 at an interest rate of 4½ per cent or the prevailing rate under present circumstances, not to exceed 5 per cent.

(2) To issue not more than $200,000 of preferred stock in shares of $10 par value with a dividend rate of 5½ per cent or the present prevailing dividend rate.

(3) To issue not more than $200,000 of common stock in shares of $10 par value.

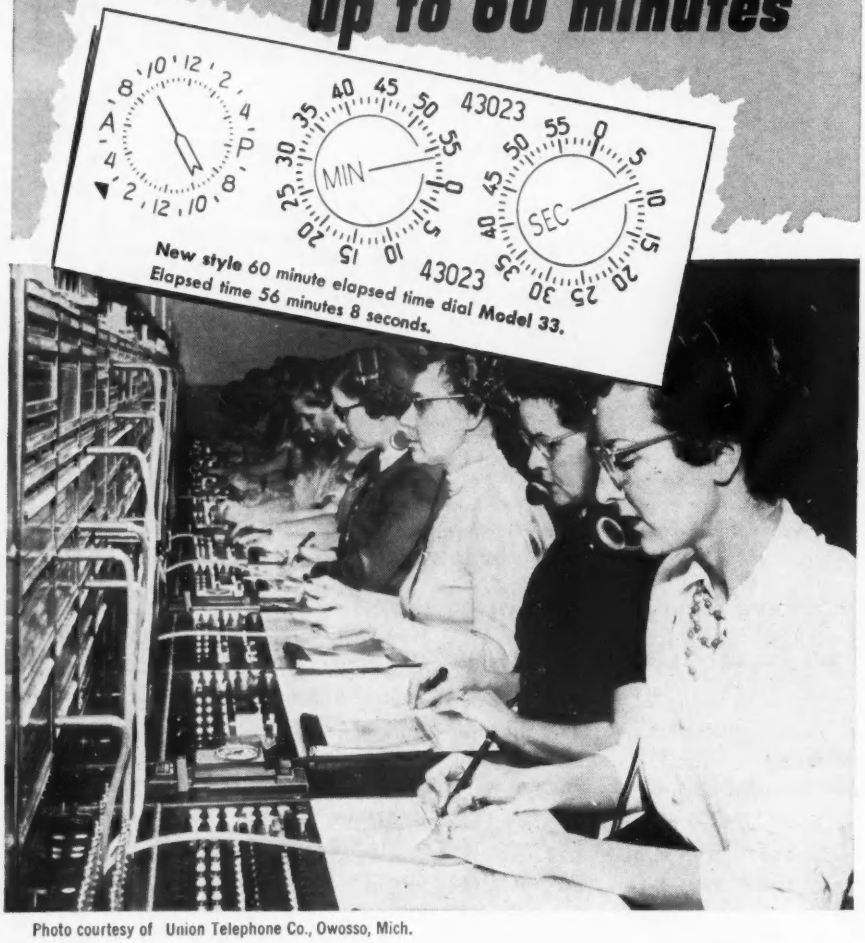
As an alternative to these plans, the commission said Consolidated could arrange financing with the manufacturer of the telephone equipment for the purchase of which funds are required.

General Names Taylor Director of Personnel

MARSHALL K. TAYLOR, secretary of General Telephone Co. of

CALCULAGRAPH

Now Automatically gives you accurate Toll Call Records— up to 60 minutes



New style 60 minute elapsed time dial Model 33.
Elapsed time 56 minutes 8 seconds.

Photo courtesy of Union Telephone Co., Owosso, Mich.

Now, Calculagraph, the modern dependable computer, automatically figures and prints toll calls up to 60 minutes —no need to add 30 minutes on long conversations.

Thus, Calculagraph adds one more feature to reduce human errors by busy operators and increases the volume of calls handled per operator. Assures you of all revenue due on every call.

For accurate toll call records, for automatic computation of elapsed time, for more efficient operation, install the new 60-minute elapsed time Calculagraph on your switchboard.

Information on this new Calculagraph is yours upon request.

Write today for illustrated brochure to Dept.

535

CALCULAGRAPH Company
HARRISON, N. J.

DEPENDABLE ELAPSED TIME COMPUTERS SINCE 1892

Calif., has been appointed director of personnel for General Telephone System, it was announced in New York by the System's President, Donald C. Power.

In making the announcement, Mr. Power pointed out that the title of the position which Mr. Taylor will fill had been changed from industrial relations director to director of personnel. This is in line with the System's policy of giving broader scope to the entire subject of personnel management. Mr. Taylor will report directly to Mr. Power where previously the industrial relations function had been a part of the operations department.

REA Loan Report

A RURAL telephone loan of $5,667,000 to an Iowa borrower was included in the loans approved by the Rural Electrification Administration last month. The Iowa loan is the largest made in that state and one of the largest made any where since the start of REA's telephone program. It will benefit 15,960 rural subscribers in three states, including service for the first time to 1,098 farm families and other rural subscribers.

NEW HAMPSHIRE: Chester Telephone Co., Chester, N. H.; $220,000, first loan, to finance the improvement and extension of rural telephone service in Rockingham county.

The new borrower is a commercial corporation which operates a system started in 1877. It plans to use the loan funds to improve service for its existing 311 subscribers, and to furnish service for the first time to 140 rural families now without telephones. Presently, the Chester company is providing magneto service over 46 miles of line.

The borrower's plans include a new dial central office building in Chester and 31 miles of new line. The existing central office will be used as a business office. Of the existing line, 26 miles will be used in place in the expanded system, 7 miles will be rebuilt and the remainder retired.

John S. Rand is president and manager of Chester Telephone Co.

SOUTH DAKOTA: Sanborn Telephone Cooperative, Woonsocket, S. D.; $269,000, second loan.

The borrower is planning to use the loan funds to provide new and improved service for 454 farms and

other rural establishments. This includes service for the first time for 206 subscribers.

As a nucleus for this new service, the cooperative plans to extend its territory into Miner county and to serve an additional area in Sanborn county. It has recently acquired the Telephone Service Co. at Fedora which is now providing magneto service to 248 subscribers over 112 miles of line. The central offices, located at Artesian and Fedora, will be replaced with new dial central office buildings, and 143 miles of new line will be added to the system. Of the present line, 98 miles will be rebuilt, and the remainder retired.

The two REA loans totaling $797,000 will make possible modern telephone service to 1,303 rural subscribers over 653 miles of line, in Aurora, Davison, Jerauld, Miner and Sanborn counties. The system will consist of four dial offices of which Forestburg and Woonsocket are under construction.

Alfred Godfrey is president and R. M. Judy is manager of the Sanborn cooperative.

TEXAS: Mid-State Telephone Co., 409 Frost National Bank Building, San Antonio, Texas; $139,000, second loan.

The borrower proposes to use part of the loan funds to furnish new and improved service to 230 subscribers in Milam county. As a nucleus for this new service, the borrower plans to acquire the Milano Telephone Co. at Milano, now providing magneto service to 136 subscribers over 45 miles of line.

New construction scheduled by the Mid-State company includes a dial central office at Milano and 36 miles of line. Of the existing line, 34 miles will be used in place in the expanded system and the remainder retired.

In addition, the borrower plans to use a portion of the loan to furnish telephone service for the first time to 64 subscribers in the Buchanan Dam area in Llano county who were not included in the first loan. New facilities required for this service will include 5 miles of line.

The two REA loans totaling $333,000 will make possible new and improved service for 917 rural subscribers in Llano, Milam and Williamson counties. The system will consist of 197 miles of line. The

Please turn to page 76

Professional Services

Installation Specialists
CENTRAL OFFICES
Installed-Modified-Removed
COMMUNI-CATERING
All Makes
P. O. Box 6712
CHICAGO 7, ILLINOIS

HARRIS-McBURNEY CO.
PUBLIC UTILITY CONSTRUCTION
A complete construction service for the telephone industry
Construction Crews — Engineering
Station Installers — Appraisals & Reports
Cable Splicers — C. O. Installation
Underground Duct Systems
Telephone ST 4-6126
P. O. ox 267 — Jackson, Michigan

CARL C. CRANE, INC.
Consulting Engineers
2702 Monroe Street, Madison 5, Wis.
Telephone CEDAR 3-4210

Construction Crews — Station Installers
Central Office Installations
Cable Splicers — Complete Engineering
HENKELS & McCOY
6100 North 20th Street Philadelphia, Pa.
Now Operating in 30 States
OFFICES LOCATED AT
Elkhart, Ind. - Tel. 2-5650
Norwalk, Ohio - Tel. 3-0231
Lansing, Mich. - Tel. IV-5-7642
Pekin, Ill. - Tel. 6-6336
Erie, Pa. - Tel. 2-4300
Sumter, S. C.
PERFORMANCE Has Built Our Business

Save Money and Time!
TOLL TICKETS
1-LOUT on Bond Paper
ONLY 40¢ THOUSAND (MIN. 20,000)
TELEPHONE PRINTING SPECIALISTS FOR 49 YEARS
TELEPHONE 42-3341
CULLOM & GHERTNER CO.
PRINTERS • LITHOGRAPHERS
600 21ST AVE., N. • NASHVILLE, TENN.

JAY G. MITCHELL
CONSULTING ENGINEER
APPRAISALS—COSTS—PLANT
7720 SHERIDAN ROAD — CHICAGO
FOR MAIL BOX 523 EVANSTON, ILLINOIS

Davis UTILITY PLANT CONSTRUCTION
Construction Co.
45 North Clark Street • Sullivan, Missouri

NEALE CONSTRUCTION CO.
ENGINEERING • CONSTRUCTION • MAINTENANCE
TOPEKA, KANSAS — PHONE 4-2621

TELEPHONE PRINTING
By People Who Know the Telephone Business.
See the Suttle Catalog
SUTTLE EQUIPMENT CO.
LAWRENCEVILLE — ILLINOIS

INSPECTION SERVICE
Of poles, crossarms, and preservative treatments. Analysis of wood preservatives. Consulting and specification writing. Inspectors stationed throughout the U.S.A.
A. W. WILLIAMS INSPECTION CO., INC.
MOBILE, ALABAMA
Established 1921 — Member A.C.I.I.

Let A Low Cost PROFESSIONAL AD In Telephone Engineer & Management Do The Job For You

BUYERS' GUIDE

ADVERTISING. Directories — *General Telephone Directory Co., 1800 Busse Highway, Des Plaines, Ill.*—[ADV. 1]

BELTS — CLIMBERS — COMPLETE LINEMEN'S EQUIPMENT, *W. M. Bashlin Co., Bashlin Bldg., Grove City 1, Pa.*—[ADV. 2]

BOOTHS—Acoustic Telephone — *Sherron Metallic Corp., 1202 Flushing Ave., Brooklyn 6, N. Y.*—[ADV. 3]

CORDS, Switchboard (with or without plugs), Instrument (retractable and regular) and Operators — *Commercial Cord & Supply Co., Inc., 26 Main St., Clifton Springs, N. Y.*—[ADV. 4]

CORDS, Switchboard & Telephone — *Runzel Cord & Wire Co., 4727-31 Montrose Ave., Chicago 41, Ill.*—[ADV. 5]

INSULATORS, Porcelain — *Porcelain Products Inc., Box 300, Findlay, Ohio.*—[ADV. 6]

PIPE PUSHERS — *Giant Manufacturing Co., South 6th St., at 12th Ave., Council Bluffs, Iowa.*—[ADV. 7]

POLE HOLE DIGGERS — *For derrick mounted trucks. Tele-E-Lect Products, Inc., 9613 Minnetonka Blvd., Minneapolis 26, Minn.*—[ADV. 8]

POLES, Southern Yellow Pine — *Taylor Colquitt Company. 217 E. Main St., Spartanburgh, S. C.*—[ADV. 9]

POLES, Southern Yellow Pine — *Texas Creosoting Co., Orange, Texas.*—[ADV. 10]

PROTECTIVE EQUIPMENT — *Reliable Electric Company, 3145 Carroll Avenue, Chicago 12, Ill.*—[ADV. 11]

REBUILT TELEPHONES & SWITCHBOARDS — *Telephone Repair & Supply Company, 1760 Lunt Avenue, Chicago 26, Ill.*—[ADV. 12]

TRUCK BODIES — *Highway Trailer Co., Edgerton, Wisc.*—[ADV. 13]

WIRE, Insulated — DATED DROP WIRE — Neoprene or Weatherproof — *Alphaduct Wire & Cable Co., New Brunswick, N. J.*—[ADV. 14]

WIRE, Insulated Drop and Bronze or Copperweld — *Acorn Insulated Wire Co., Inc., 36 Freeman St., Pawtucket, R. I.*—[ADV. 15]

WIRE, Telephone, for all inside and outside uses — *Whitney Blake Co., New Haven, Conn.*—[ADV. 16]

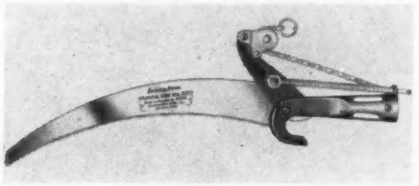
A TE&M Service Department

NEW PRODUCTS

IN THIS ISSUE our New Product editor describes and offers free information on — (1) a tree-pruning device; (2) the "Secoder;" (3) an emergency lighting unit; (4) a new power tool; and (5) new solderless wiring devices.

Pruning Tool

NEW TREE PRUNING device now offered by Seymour Smith is a combination of pruner head and pole saw — blade on pruner head for clipping small branches up to one-



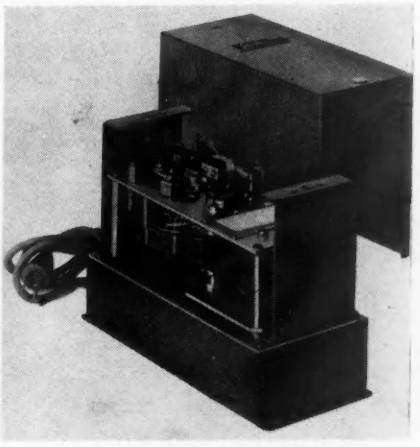
inch diameter and saw for larger limbs even up to five-inch diameter.

Pruner head is the No. 11 Telephone Tree Pruner Head, said to be standard equipment with many large utility companies. Saw blade attachment is made of Swedish charcoal steel. Teeth are described as needle sharp to assure fast, easy cutting. These two devices — head and saw blade — are now combined in one tool for the convenience of the utility company and tree expert users.

This new tree pruning tool is cataloged as No. 2011 and is designed for use with Seymour Smith No. 102 six foot head pole and No. 103 six-foot extension pole, as well as with their No. 1P12 unjointed pole.—For complete data, *Check New Product* 105.

"Secoder"

ELECTRICAL COMMUNICATIONS, INC., has announced production of the "Secoder," an electromechanical device which is electrically connected in place of the bell on magneto and other types of party-line telephones where coded ringing is employed. The "Secoder" counts and differentiates between long and short ringing signals. A built-in bell rings only when a ringing combination is intercepted which matches the code wheel in the "Secoder." The bell is silent at all other times and is not actuated by any other ringing signals on the line. The duration of the ring may be set to any desired value between one and four seconds.



The principal application is on rural party line telephones and in private telephone systems utilizing magneto telephones. The "Secoder" permits individual ringing of telephones on the same line without requiring additional central office equipment.

The "Secoder" contains a line relay, a Secode type 48WC1 selector and a bell housed in a gray hammertone metal enclosure 10" long, 4½"

wide and 6¾" high. The entire assembly weighs 11 pounds and may be mounted horizontally or vertically on a flat surface. The dust cover is easily removed to permit access to the mechanism and circuitry.

The "Secode" selector is actuated by the line relay which responds to low frequency ringing signals. Power for the operation of the selector mechanism is derived from a 117 volt ac source through a built-in rectifier. At locations where utility power is not available, a battery operated model may be used. No power is required during stand-by.

The Secoder is supplied with a code wheel cut to respond to any specific code out of over 250 code combinations. Code wheels may be easily replaced to change the code combination.

When desired, Secoder units may be provided with an "all call" feature which permits simultaneous ringing of all Secoder equipped telephones on the same line without affecting the ability to ring each telephone individually.

The type 763A-AC Secoder is furnished with a built-in rectifier for ac operation and is equipped with a power cord and plug. The type 763A-DC Secoder does not include a rectifier and is intended for battery operation. These units are available for operation from a 6, 12, 24, 48 or 115 volt dc source. Secoder units for operation on other dc voltages are available on special order. All types are properly fused.—For complete data, *Check New Product* 106.

Emergency Lighting Unit

A NEW emergency lighting unit, which not only operates automatically and instantaneously during failures of normal power but also automatically prepares itself for the next blackout, has been developed by Exide Industrial Division of The Electric Storage Battery Co.

Because of an automatic charging device, the Model A Exide Lightguard is able to provide greater protection against the perils of lighting failures than ordinary emergency lighting units. It requires only minimum battery maintenance.

Immediately following an emergency discharge, the Model A automatically recharges its storage battery at a high rate. At the end of the high-rate charge the Lightguard

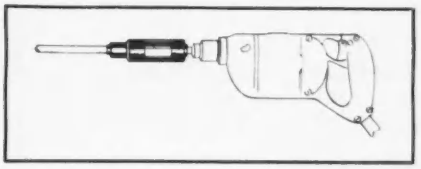
New emergency lighting unit operates instantly and automatically.

automatically returns the battery to a trickle-rate to maintain itself in a state of constant readiness. A temperature-compensated thermal voltage-sensing relay eliminates the need for a charge-rate switch, which would require manual operation after discharge and after completion of recharge.—For complete data, *Check New Product* 107.

Power Tool

WITH the aid of "Hammerin Hank," a rotary impact masonry drill attachment developed by Power Tools Corp., a worker can adapt the principle of the pneumatic hammer to an electric drill. According to the manufacturer, the change is made by a simple invention that attaches to a chuck in 10 seconds and bores through an inch of solid concrete in half a minute.

Power Tools Corp. reports that tests of the unit by an impartial panel of construction experts produced



the following results: One inch of concrete was bored in 29 seconds; 1000 holes, each 1½ inches deep, were bored, averaging 1 minute each, without any appreciable loss of speed or dulling of the bit; and, the drill was tried on common red brick, and, at a thrust of 16 lbs., 6 oz., bored an inch hole in 59 seconds. — For complete data, *Check New Product* 108.

Solderless Wiring Devices

NEW 8-PAGE technical bulletin entitled "Solderless Wiring Devices" illustrates, describes and furnishes sizes and specification data on new time-saving solderless terminals and connectors for crimping to wire extremities.—For your copy, *Check New Product* 109.

READER'S SERVICE DEPT.

T - E - M
2 - 1 - 57

■ PLEASE PRINT

NAME: .....

TITLE: .....

COMPANY: .....

ADDRESS: .....

Telephone Engineer Publishing Corp.
7720 N. Sheridan Road
Chicago 26, Ill.

■ **Please send me information on the following items: — (Check Items Wanted)**

NEW PRODUCTS

NP 105..... NP 106..... NP 107..... NP 108 ..... NP 109.....

SERVICES AND SUPPLIES

ADV. 1..... ADV. 2..... ADV. 3..... ADV. 4..... ADV. 5.....

ADV. 6..... ADV. 7..... ADV. 8..... ADV. 9..... ADV. 10.....

ADV. 11..... ADV. 12..... ADV. 13..... ADV. 14..... ADV. 15.....

ADV. 16.....

THE CLEARING HOUSE

Published in each issue of Telephone Engineer & Management. Advertising forms close on 1st & 15th of month. Rates 15 cents a word except for Situation Wanted ads, which are only 10 cents per word. In figuring cost of ads, count each word of address in number of words used. All ads payable in advance. Minimum charge—$2.00. Special rates for display ads on request. Send copy and box number replies to Telephone Engineer Publishing Corp., 7720 N. Sheridan Road, Chicago 26, Ill.

HELP WANTED

CABLE SPLICERS, Station Installers, Equipment Installers, Linemen. Experienced men needed. Steady work, good pay. Henkels & McCoy, 1211 Kenmore Avenue, Elkhart, Indiana, or 6100 N. 20th St., Philadelphia, Pa.

PLANT ENGINEERS — For large Independent Telephone Company. Some experience necessary. In reply state age, educational and employment history. Address reply to Personnel Supervisor, Rochester Telephone Corporation, 10 Franklin Street, Rochester 4, New York.

HELP WANTED: Communications Engineer. For large Railroad System. Some experience necessary. Desire B.S.E.E. or equivalent. Salary over $700 a month. In reply state age, educational and employment history, military status. All replies will be held confidential. Location Mid West. Write Box 9051 Telephone Engineer Publishing Corp., 7720 N. Sheridan Rd., Chicago 26, Ill.

HELP WANTED: Equipment Engineer for exchange of 8,000 lines of step by step equipment in mid-western city. Progressive company, locally owned, offers permanent employment with more than the usual advantages. Pay commensurate with ability and experience. Please give qualifications, age, employment history and salary expected in first letter. Your reply will be held confidential. Write Box 9049, Telephone Engineer Publishing Corp., 7720 N. Sheridan Rd., Chicago 26, Illinois.

HELP WANTED: C. O. Equipment man, experienced in A. E. Company equipment, needed in exchange of 20,000 stations in middle west. Good working conditions with opportunities for advancement. Replies confidential. Please send qualifications and resume of experience to Box 9050, Telephone Engineer Publishing Co., 7720 N. Sheridan Rd., Chicago 26, Ill.

HELP WANTED: Cable Splicer, experienced. Give age and employment history. Steady job for reliable man. Location, Southern Indiana. Write Box 9053 Telephone Engineer Publishing Corp., 7720 N. Sheridan Rd., Chicago 26, Illinois.

USE TELEPHONE ENGINEER AND MANAGEMENT'S CLEARING HOUSE
To locate workers—jobs—merchandise. A small ad covers the field.

SITUATION WANTED

SITUATION WANTED: Supervising engineer, 16 years experience C. O. equipment, PABX installation, maintenance and engineering, 3 years college training science and business administration desires to relocate in U. S. or abroad. Prefer plant management or sales engineering position. Married, age 36. Reply Box 9052 Telephone Engineer Publishing Corp., 7720 N. Sheridan Rd., Chicago 26, Ill.

FOR SALE

FOR SALE: 1000 lb. used Copperweld no. 12 AWG line wire 20¢ lb., 150 Leich magneto no 901 hand sets — $15.00 each, 200 Vincent rare gas relays — $1.50 each, 1 channel Kellogg toll or subscriber carrier — $600.00, 2 weatherproof C. B. telephones — $10.00 each, 8 no. 23J or equivalent pay stations with handsets — $20.00 each, 3 no. 11 pay stations — $6.00 each, 5 no. 11J pay stations — $10.00 each, 60 C. B. hotel wall compacts $1.50 each, 125 Kellogg C. B. no. 900 handsets — $2.50 each, 25 Leich no. 62 C. B. handsets — $2.00 each. All above removed from service on dial cutover. Prices F. O. B., Potosi, Missouri.

Potosi Telephone Company
105 North Mine St.
Potosi, Missouri

FOR SALE

FOR SALE: — Western Electric #302, $10.00 ea.; Western Electric #202 W/684A ringers, $7.00 ea.; Western Electric #211 W/684A ringers, $6.00 ea.; Western Electric #392-6" gongs W/cond., $4.00 ea.

All telephones in good condition, dial blanked, just removed from service.

Also, lead stubbed, protected and unprotected, W. E. and Cook Cable Terminals, 6 to 26 pair, Inquire.

Please send replies to Box 9048, Telephone Engineer Publishing Corp., 7720 N. Sheridan Road, Chicago 26, Illinois.

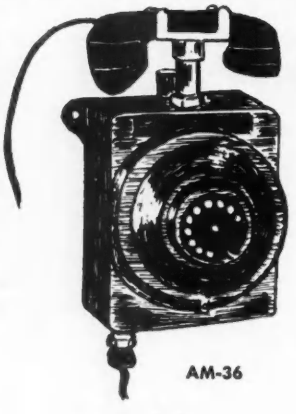
TELEPHONE RINGING POWER UNITS

Subcycle Model B.	$30.00
Subcycle. Model M.7 .5	$20.00
Telering. Model H.	$10.00
Kellogg #41, Pole Changer, 24 v. Batt. Input. 100 Volt. 20 Cy output	$15.00

Prices F.O.B. Chicago, Illinois.

INDEPENDENT TELEPHONE REPAIR CO.

2137 West 21st Street, Chicago 8, Illinois



EXPLOSION RESISTANT TELEPHONES

(Reconditioned)

A.E. No. AM-36 part of ETA-24 complete with dial as shown, less signal. Threaded pipe cap for conduit located behind handset hookswitch. A very good buy.

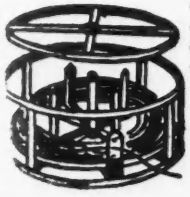
ONLY 15 AVAILABLE

YOUR COMPLETE EQUIPMENT SUPPLY HOUSE

BUCKEYE TELEPHONE & SUPPLY CO.

P.O. BOX 5707 HU. 8-0655 COLUMBUS 21, OHIO

FOR SALE: WESTERN ELECTRIC NO. 392 LOUD BELLS. Refinished and tested, with condenser — $6.00 each. Write Telephone Equipment, Inc., Montrose, Mich.



For illustrated literature on this pay-out, take-up wire reel, write

Whitaker Reel Mfg. Co.

P. O. Box 1318
MONROE, LOUISIANA

Sea Phone Men Honored By England's Queen

THREE MEN who played a prominent part in establishment of a submarine telephone service linking the Old World and the new were included in the New Years' honors list released last month.

Col. Sir Arthur Stanley Angwin, chairman of the Commonwealth Telecommunications Board, was made a Knight Commander of the Order of St. Michael and St. George.

Alleman Holly Roche, telecommunications engineer in charge of submarine cable system development and production division, Standard Telephones and Cables Ltd., became an Officer of the Order of the British Empire. The same honor went to Capt. Thomas Andrew Vickers, commander of the cable ship which laid much of the coaxial submarine cable.

General of S. W. Tests Microwave Installation

TESTING is underway on what will be the first microwave installation of General Telephone Co. of the Southwest. The installation will provide foreign exchange service between the company's exchange at Jacksonville in East Texas to the isolated site of Stryker Dam, located 19 miles from Jacksonville. The microwave installation utilizes two units operating in the 6,000-megacycle band.

A 90-foot H-fixture of wooden telephone poles was constructed for the microwave terminal in Jacksonville. The microwave unit is mounted on a platform about seven feet above the ground level, making it easily accessable for maintenance purposes. Near the top of the fixture, a plane reflector mounted at a 45-degree angle has been installed

Located 17½ miles away near Stryker Dam is a 165-foot triangular steel microwave tower. At this location, the microwave unit is also mounted on a platform about seven feet above ground level with the plane reflector located near the top of the tower. About 1½ miles of rural distribution cable has been built from the tower to the dam site.

General Telephone engineers are using microwave instead of pole line construction primarily because of the cost difference. The microwave installation is costing an estimated $11,000 while it was estimated that pole line construction between the two points would have cost about $50,000. The Stryker Dam, being built by the Texas Power and Light Company, is located in a remote, inaccessible area.

Initially, the microwave installation will provide two circuits.

Northern Ohio Tel. Co. Advances W. O. Pinyerd

COLONEL Wm. C. Henry, president and general manager of Northern Ohio Telephone Co., Bellevue, has announced the appointment of Walter O. Pinyerd as general equipment superintendent, responsible for all central office equipment, maintenance installation and additions.

Mr. Pinyerd, a native of Delaware, Ohio, joined Northern Ohio Telephone in 1946, and was assigned to the Bowling Green office as an equipment man. Two years later he was transferred to the general office and since that time he has been engaged in installation and maintenance of central office equipment.

FOR SALE

7 Positions Kellogg #12-1600 switchboard equipped with 1000 subscriber lines multipled on a 3 panel basis. Positions equipped as follows: 2 Universal Positions each equipped with: 15 Cord circuits and dial circuit using dial cord. 5 Feature positions each equipped with: 17 Cord circuits; 1 Cable turning section

6 Positions Kellogg masterbilt universal type toll board with full subscriber line multiple on a 4 panel basis. Each position equipped with 10 cord circuits with sleeve dialing on both cords.

1 Cable turning section
230 Strips 20 per strip line lamps in local board
380 Spring jacks, numbered and drilled for marking in local and toll board
Miscellaneous and trunk multiple 10 per strip
30 Ringdown toll line circuits
10 Recording trunk circuits
10 Local to rural trunk circuits
15 Kellogg dial to manual trunk circuits
1000 C.B. line circuits
13 Verticals main distributing frame equipped with 39 Western Electric 20 pr. protectors and 15 #8 Cook 20 pr. protectors arranged for switchboard termination. Each vertical 100 lines high.
1 Power Panel arranged for manual switching of ringing equipment.
1 Holtzer-Cabot A.C. interrupter and 1 Holtzer-Cabot D.C. interrupter. 2 Kellogg 5 frequency pole changers. 1 Electric Products Company Motor generator set, 33 volts, 25 amp. out-put with choke coil and automatic control panel.
1 1067 Raytheon 24 volt, 6 amp. charger
1 1073 Raytheon 24 volt, 2 amp. charger
1 1066 Raytheon 24 volt, 1 amp. charger
1 11 cell EM-5 battery dated October, 1946
1 11 cell EM-13 battery dat- Sept. 1942

This equipment can be inspected before dismantling at Abingdon, Virginia

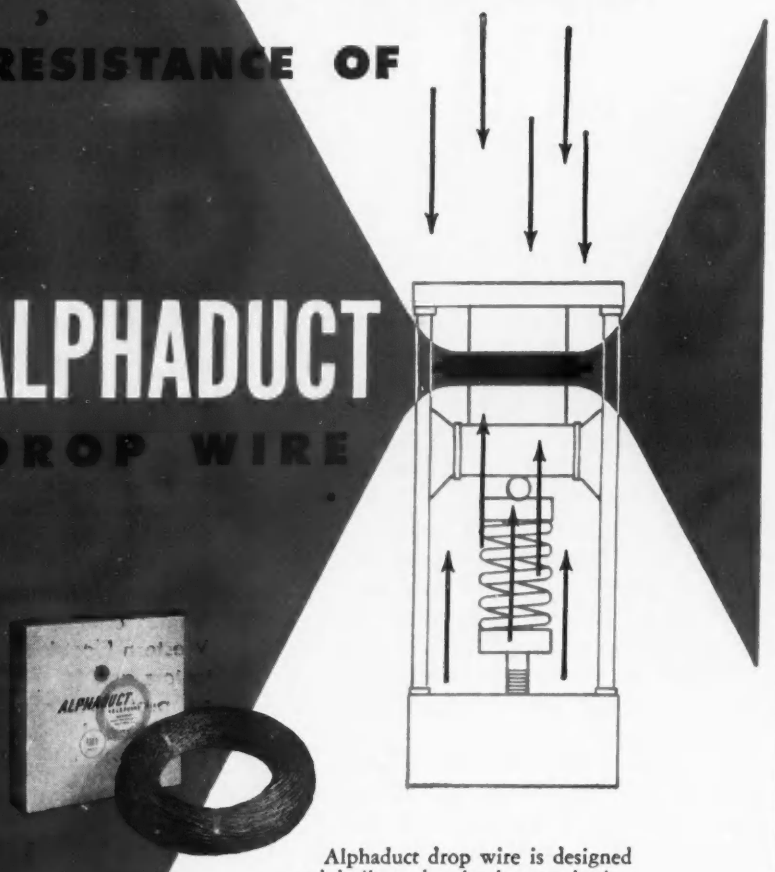
Please Contact — W. R. Correll, Equipment Supt., INTER-MOUNTAIN TEL. CO., Bristol, Tenn.

1500 pounds

MINIMUM COMPRESSION RESISTANCE OF

ALPHADUCT

DROP WIRE



Alphaduct drop wire is designed and built to be the longest lasting drop wire you've ever installed. It's tested . . . completely, thoroughly and often to make sure that every single coil is up to Alphaduct's rigid standards.

Here's how the insulation is tested to make sure it won't crush.

Short lengths of Alphaduct are placed between the steel plates of a compression testing machine. These plates are then forced together at uniform speed until the insulation crushes. Alphaduct parallel drop wire has to withstand a minimum load of 1500 pounds before it breaks. Each conductor of Alphaduct twisted pair will withstand a 1000 pound pressure.

You don't have to worry about a little rough handling breaking down this kind of tested insulation. Try Alphaduct drop wire. It's dated, so you can see for yourself the extra wear it provides.

ALPHADUCT WIRE AND CABLE COMPANY • NEW BRUNSWICK, N.J.
NATIONAL DISTRIBUTORS • AUTOMATIC ELECTRIC SALES CORP., CHICAGO, ILLINOIS • LEICH SALES CORPORATION, CHICAGO, ILLINOIS. REGIONAL DISTRIBUTORS • PANKEY SUPPLY CO., CHARLOTTESVILLE, VA. THE LINDSAY TELEPHONE SUPPLY CO., CLEVELAND, OHIO

(Concluded from page 71)

Buckholtz and Hutto central offices already make up the four dial exchanges.

W. S. Bain is president of the company.

IOWA: Iowa-Illinois Telephone Co., New London, Ia.; $5,667,000, first loan, to finance the improvement and extension of rural telephone service in 19 counties in Iowa, four in North Dakota, and Clark County in Missouri. This is the largest telephone loan made by REA in Iowa, and one of the largest made in the country.

The new borrower is a commercial corporation represented by Elnathan Gates, president. The loan funds will be used to provide new and improved service to 15,960 subscribers, including initial service for 1,098 families. The company now operates a system of 22 exchanges in southeastern Iowa. It plans to acquire a number of telephone properties in Iowa near its present location, and additional properties in North Dakota. When the improvement and new construction possible under the REA loan is complete, the system will consist of 3,518 miles of line and 34 dial exchanges. Twenty-nine of the exchanges will be located in Iowa, and five in North Dakota. Part of the loan funds will be used to refinance existing indebtedness.

Arthur W. Sanders is manager of the Iowa-Illinois Telephone Co.

KANSAS: Reno Telephone Association, Hutchinson, Kan.; $90,000, third loan.

The company is planning to use this loan to furnish modern dial telephone service to 68 more farm families who do not now have telephones and to 123 additional existing subscribers in its operating area.

The three REA loans to this borrower, totaling $1,183,000, will enable it to furnish dial service to 2,279 subscribers over 913 miles of line in Kingman, Pratt, Reno and Stafford counties. Dial offices for the system will be located at Abbyville, Arlington, Cunningham, Langdon, Plevna Partridge, Pretty Prairie and Sylvia. Subscribers in the Castleton area will receive service from the Pretty Prairie exchange.

B. R. Anderson is president of the Reno Telephone Association.

AUTOMATIC ELECTRIC TOPICS

FEBRUARY 1957
VOLUME 21
No. 8

He Knows His Stuff! *(see next page).*

He's Coming Home from

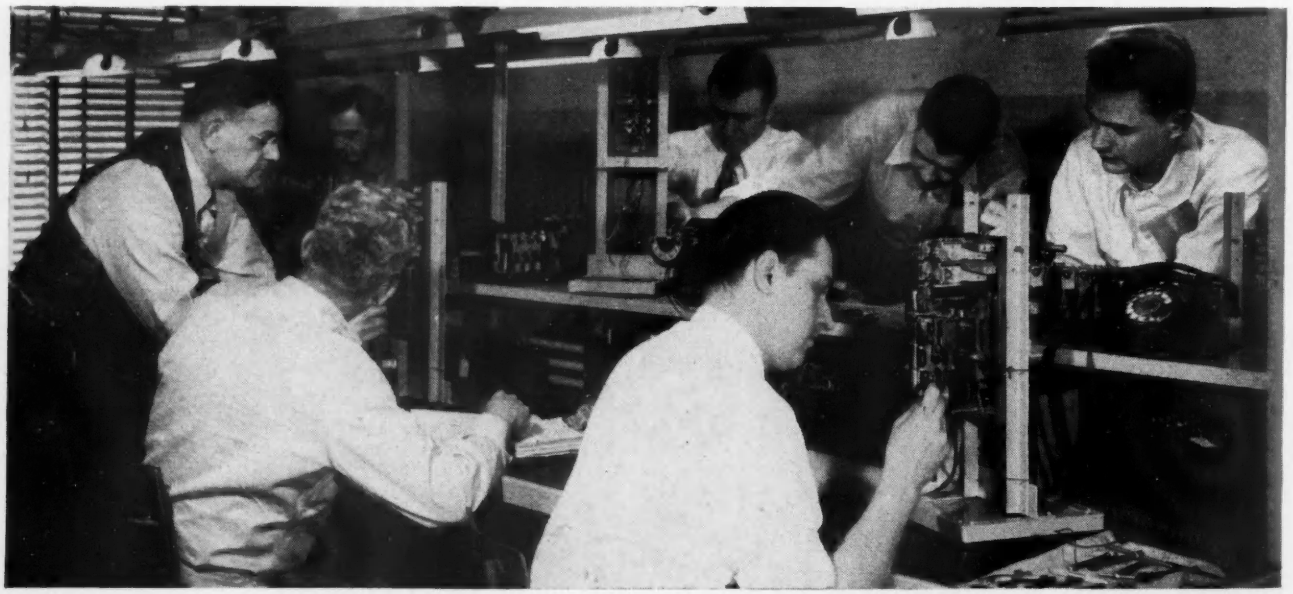
AUTOMATIC ELECTRIC'S TRAINING SCHOOL

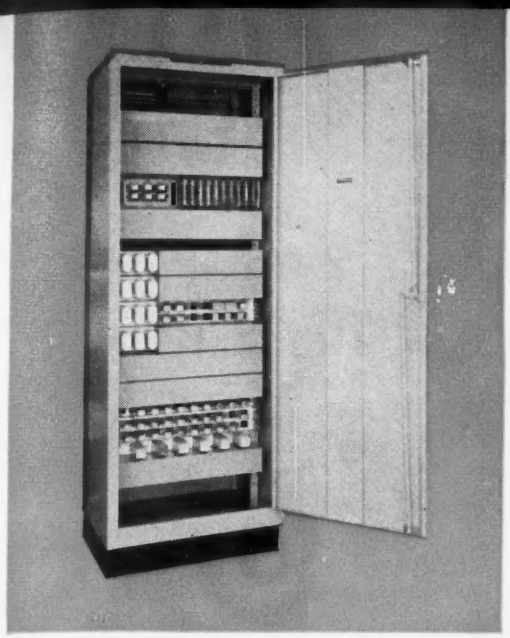
(Above) In Circuit Class at Automatic Electric's Training School in Chicago, the instructor uses the Visual-Cast Projector to show the development of a circuit. As he draws the circuit on the table before him, its greatly enlarged image is projected on the screen in front of the class.

(Below) A good operating man should know why, *but he MUST know* how. *That's why Automatic's courses include such practical training as bench work in the assembly and adjustment of relays and the Strowger switch mechanism.*

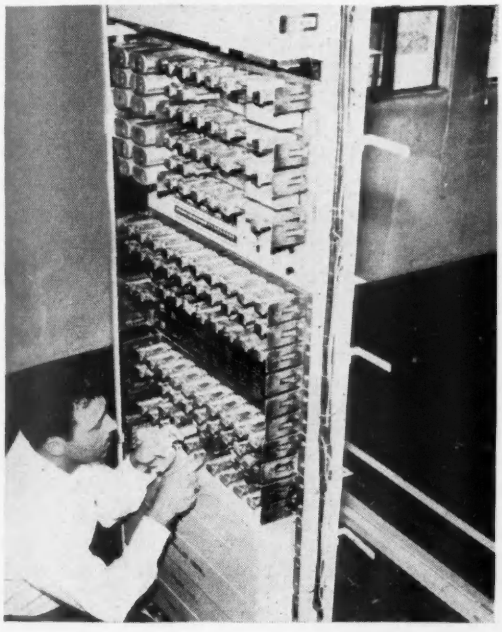
The young man on our cover is just in from Chicago. He is the proud possessor of a certificate from Automatic Electric's Training School—and his boss is mighty glad to see him! The supervisor knows that he now has a man who is well trained to maintain and operate the Company's Strowger Automatic equipment.

Every few months, occasions such as this are a part of the telephone scene in many parts of the country. Certified graduates of Automatic's Training School return home to apply their newly acquired knowledge to the smooth operation of modern telephone exchanges. The School is a part of Automatic's purpose of supplying telephone men with "know-how"—as well as the best engineered and finest manufactured telephone equipment. Many operating telephone companies are taking advantage of this extra Automatic Electric service. Their men get the same training as Automatic gives its own technical men—in fact, they work side-by-side in the same classes. Courses cover all phases of telephone communications—from theory and circuits to actual bench work. It's 11 weeks of intensive, thorough training—but when it's over, the telephone man is proud of his certificate, and his company may be confident of his ability.





Now You Can Serve ANSWERING BUREAUS With 96% Fewer Pairs



(Top) Identifier, installed in the office of the Answering Bureau, receives the pulses designating the called line, and identifies that line at the PBX.

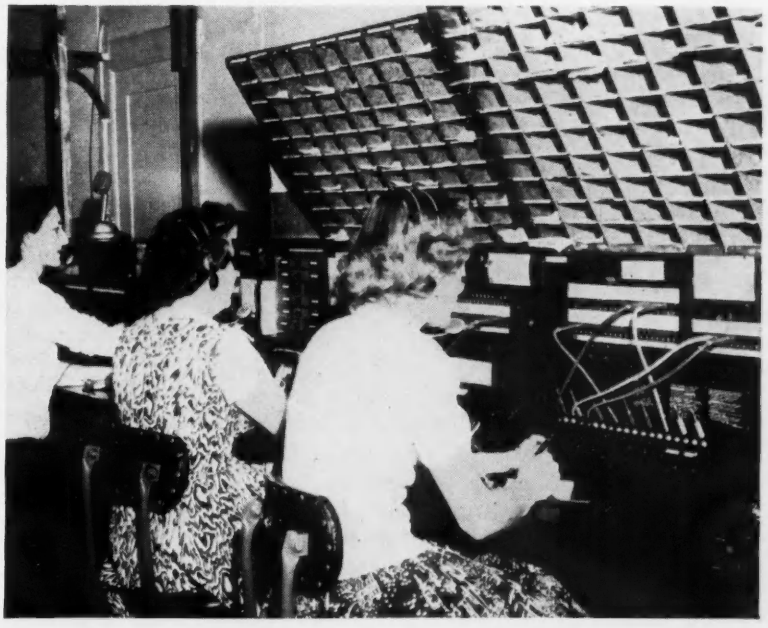
(Above) Concentrator, installed at the central office, furnishes concentration and identification of subscriber lines assigned to the Answering Bureau.

(Right) Also installed in the Answering Bureau is a PBX board. It is usually modified to include large line-designation strips which show the Bureau customer's name and business, telephone number, and answering terminal number. Pigeonholes, installed over the board by the Bureau, contain special information on each customer.

A source of considerable revenue for telephone companies is the growing business of Answering Bureaus—private firms which take calls for subscribers to their service. There is, however, a serious economic problem involved. The Telephone Answering Bureau requires many cable pairs between it and the central office—one for each of its customers. This is not practical unless the exchange and the Answering Bureau are close together.

Now Automatic Electric's new Concentrator-Identifier is an answer for Answering Bureaus in Independent territories. With it only four cable pairs are needed to serve 100 lines. That's a saving of 96%! Extra units may be installed for each additional 100 lines.

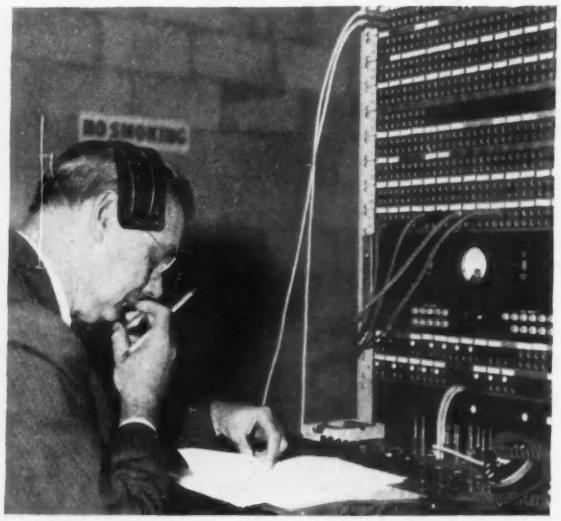
With Automatic Electric's Concentrator-Identifier, Bureau operators have a choice in answering calls, and may wait for a given number of rings before answering, as the customer may request. And the equipment is compatible with Bell equipment, thus permitting cross-boundary service. Here is answering equipment that meets all Answering Bureau needs.



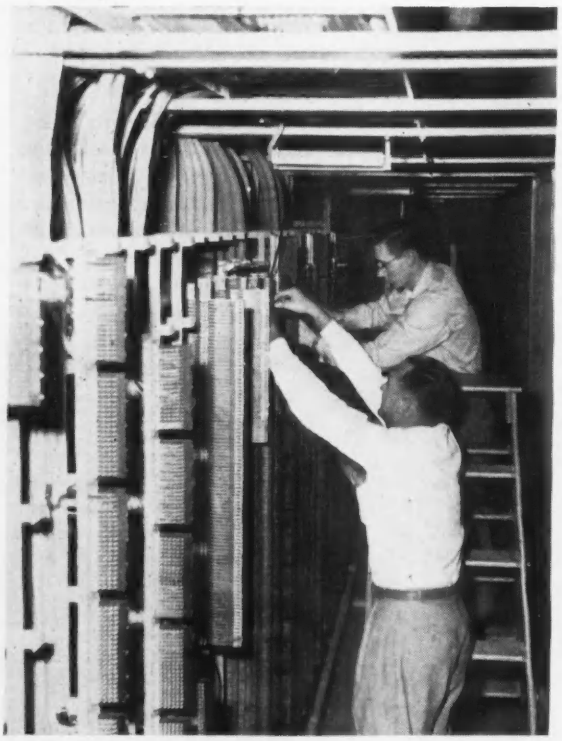
Crestview, Florida

GROWS 5 TIMES OVER--

In Ten Years



E. A. McKee, Sr., Division Plant Manager, who directed the cutover, is shown at one of the toll test panels. Crestview is toll center for Eglin Air Force Base as well as five Southeastern Company exchanges.



John McClendon, Plant Supervisor, and George Fryar are shown "pulling" the plastic strips to make the new exchange "hot." The "2-5" dialing system, terminal-per-station service, and selective ringing are incorporated in the new Strowger equipment.

When Southeastern Telephone Company, of Tallahassee, Florida, converted its Crestview, Florida, exchange from magneto to dial service in January, 1947, the new installation of 140 lines of Strowger Automatic equipment seemed more than adequate for years to come—even allowing for an abundance of Florida optimism! But it wasn't long before more lines were necessary to meet demands for telephone service. And as the town kept growing, the time came when the exchange was almost bursting at the seams.

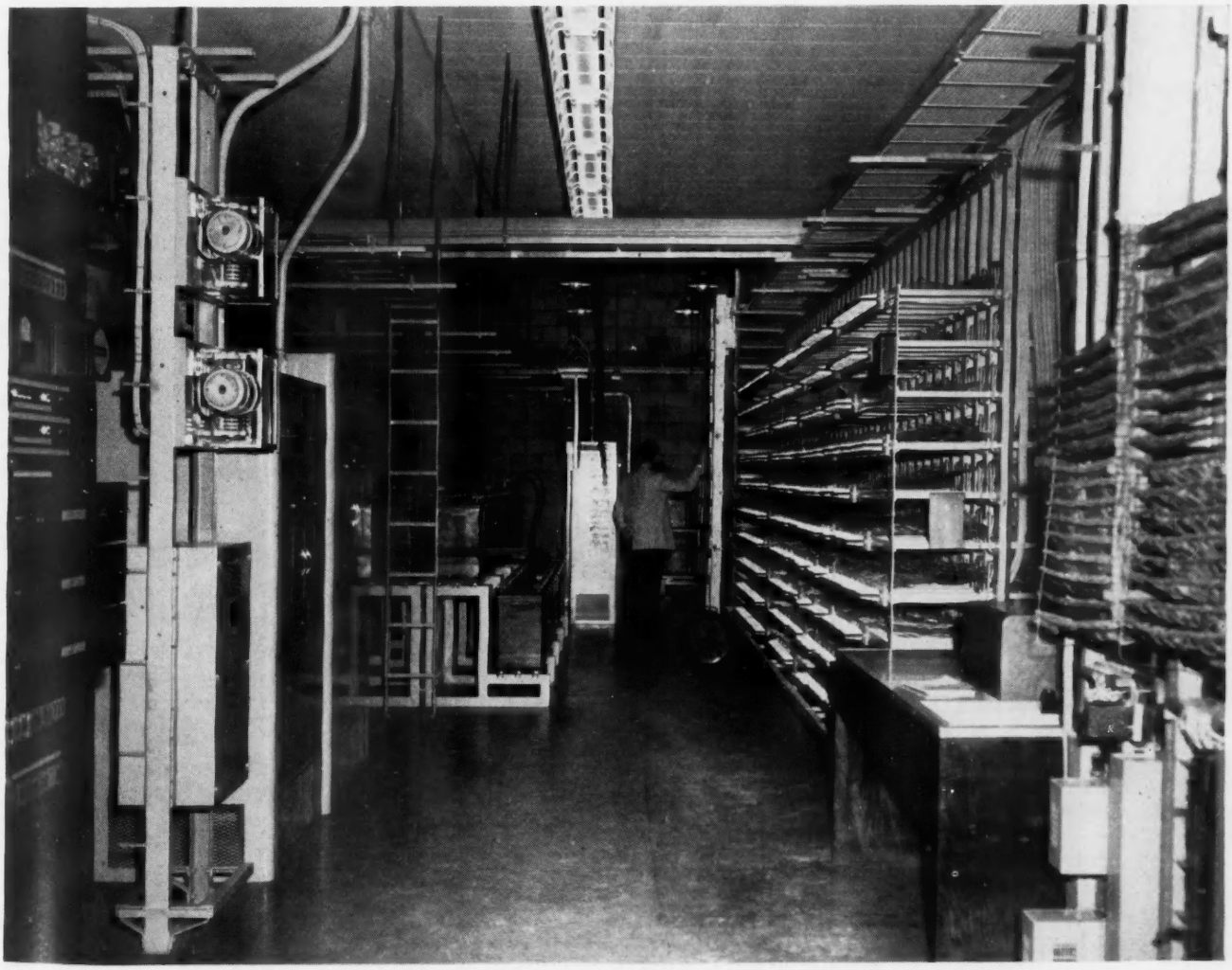
Southeastern and Automatic Electric came up with an answer, and on December 16, 1956, the Crestview plant was cut over to a new exchange and toll center. The new exchange has 800 lines (1400 terminals) of modern Strowger Automatic equipment. And Southeastern is "on-the-ready" for further expansion. The Company plans to increase the Crestview exchange by another 200 lines (600 terminals) this year, by 400 more lines (300 terminals) in 1958, and by additional amounts as needed in succeeding years. The new building is designed to provide for all this extension—and then some!

The toll center at Crestview was established in 1950 with a 12-position switchboard and a total of 39 circuits. As the town grew, the toll center, too, became swamped with calls, and it was increased in size. The new toll center is more than double the original capacity; it has a 26-position Type 31 Toll Board, with 79 circuits to exchanges within the Southeastern System, and 55 circuits to points beyond the System.

In addition to the natural tourist and summer resort attractions of northwestern Florida, the activity of nearby Eglin Air Force Base undoubtedly played a part in this amazing growth. Crestview is toll center for Eglin as well as for Southeastern's exchanges at De Funiak Springs, Destin, Fort Walton Beach, Shalimar and Valparaiso-Niceville. These Southeastern exchanges — all Strowger Automatic—cut over to the "2-5" plan of dialing along with Crestview when the cut there to the new equipment was made.

Crestview's new building is a credit to the community and offers the latest conveniences for customers—a well appointed, completely air conditioned business office, a drive-in pay window and a night depository.

Blair C. Stone, Vice President and Division Manager of Southeastern Telephone Company, proudly shows a busy toll board to Automatic's E. G. Shelor, on the morning following the Crestview cutover.



This power and frame room serves the 800 lines (1400 terminals) of Strowger Automatic equipment. The Crestview exchange is scheduled for another 200 lines this year and 400 more lines in 1958. The building is designed for even greater extension.

Staff Engineers East, West and South Are

TELEPHONE EXPERTS ALL

Automatic Electric Staff Engineers are telephone men with first-hand knowledge of your problems and the equipment that will solve them. In a recent issue we introduced our Chicago Staff Engineers. Those presented here, based on the East and West Coasts and in Atlanta, Georgia, are equally well able to serve you.

Andrew Alvin Gandolph

Mr. Gandolph has spent more than 30 years in telephone sales and engineering. His early experience gave him the belief that the step-by-step system is best, and this attracted him to Automatic Electric in 1934, his first jobs here being in installation and maintenance. After successive positions in engineering and sales, he was appointed Staff Engineer in New York in 1946.

"Like most salesmen in the field, we stand ready to help our customers around the clock," says "Gandy."

A. A. Johnson

Mr. Johnson has been with Automatic Electric all of his telephone career, which dates back to 1941. He first did installation work "all over the 48 states," this 11-year period being interrupted by two and one-half years' service in the Navy. Al transferred to the Engineering Department in Chicago in 1952, and two years later became Staff Engineer in San Francisco.

Al, his wife, and their baby son reside in a newly-purchased home in Mountain View, California.

Lawrence F. Shea

"Ted" Shea traces his telephone experience to his boyhood days, when he worked as a night telephone operator. His first full-time job, 49 years ago, was that of a lineman. After filling other communications positions, Mr. Shea joined Automatic Electric in 1928. He worked in Specialty, and in Government Sales before his appointment to Staff Engineer in New York.

Mr. Shea is married and the father of two sons, one a musician, the other with Highland Telephone Company, Monroe, N. Y.

Alvin C. Stratton

Al Stratton applies a rich engineering background to his duties as Atlanta Branch Manager and Staff Engineer for the southeastern states. He began his Automatic Electric career in 1914 as an installer, supervised cabling and terminal work and finally complete installations, and then joined Sales. The southeastern states became his sales territory in 1934. Next he added the Staff Engineer title, and in 1948 was made Branch Manager as well.

Al was born in Nahma, Michigan, but has become a confirmed Southerner.

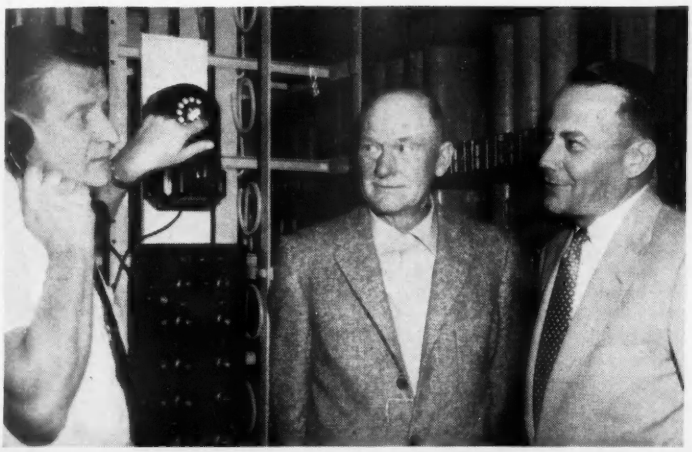
Harry M. Strosnider

Mr. Strosnider, Western Division Staff Engineer, brought with him 30 years' telephone experience when he returned to Automatic Electric in 1948. He had first joined the Company earlier in his career, completed Automatic's training school, and spent several years in Installation. To this experience he added many years' service with independent telephone companies operating Strowger equipment in the West and Southwest.

Harry Strosnider helps telephone men, through his knowledge of the operating field —knowledge based on personal experience.

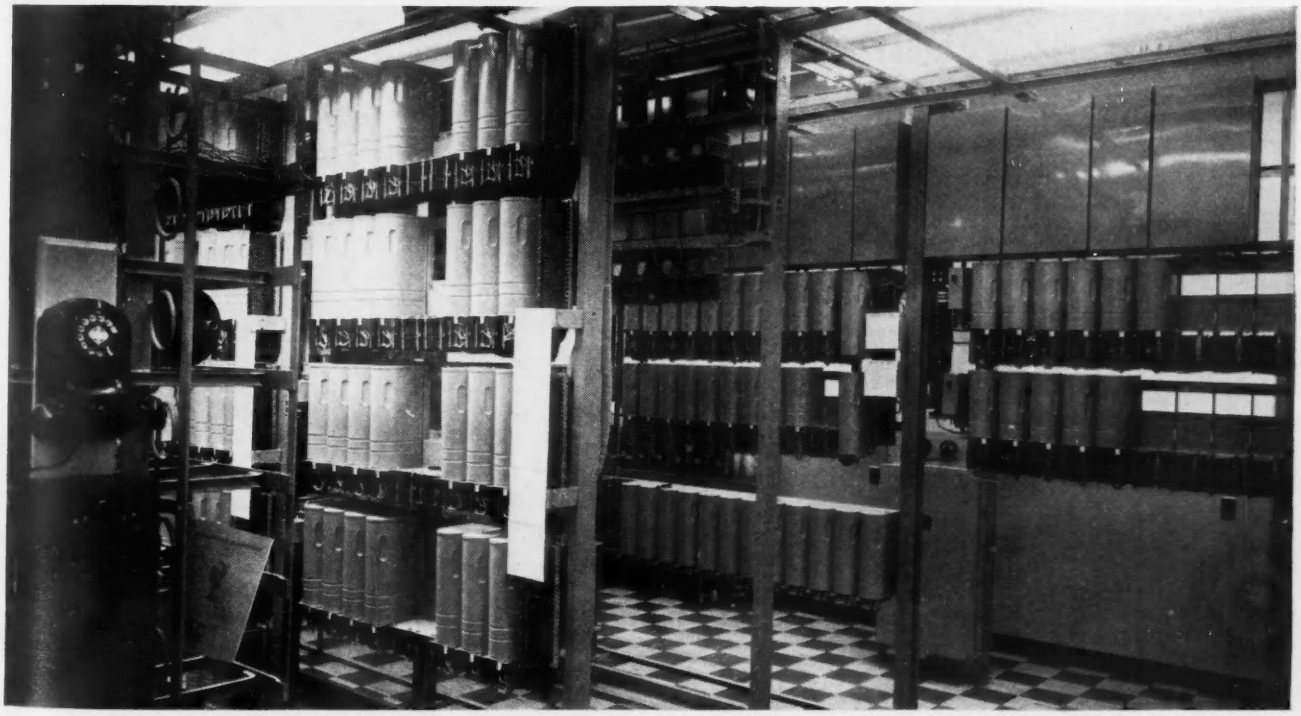
All Across the Nation they're going Strowger

Exchanges, large and small, all around the country are installing Strowger Automatic equipment. Here are pictures from two of the many companies that are finding Strowger step-by-step equipment best for them, best for their subscribers.



(Above) The Cabot, Vermont, cutover to Strowger Automatic equipment was a highlight of Molly's Falls Telephone Company's 50th anniversary celebration. Cabot's old magneto switchboard was replaced with 70 lines of modern Strowger Automatic Type 11 dial equipment, incorporating terminal-per-station service and selective ringing. Making the first call is Company President Gerald Morse, as Automatic Electric's William Dubben stands by.

(Left) Manager C. M. Cunningham and Chairman H. L. Cedarholm of the Filer (Idaho) Mutual Telephone Company make a routine check following recent cut over. At right, Automatic's Wayne Leonard.



The Filer Mutual Telephone Company cut to modern dial service with the installation of 320 lines of Strowger Automatic Type 11 M-A-X equipment. Using "2-5" numbering, Filer is right up to date, and ready to join the nationwide Direct Distance Dialing network whenever the occasion arises.

MEMO

Dear Harry:

Looks like I owe you a dinner!

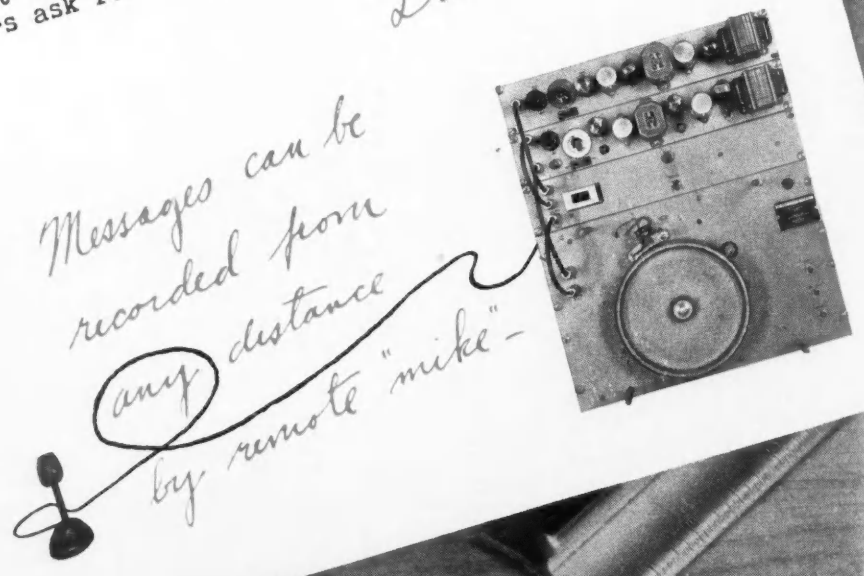
Remember last fall when you told me about the "Dial-a-Devotion" program the Church's Men's Club was planning--the recorded inspirational message for telephone callers? Well, I didn't think it would go. In fact, I bet you that dinner.

Luckily, I was overruled, and we installed an Automatic Electric Type VML Recorder - Announcer - the same type of equipment that's used for weather reports, advertising pitches, etc. Now I'll admit it's really doing a job for them. The club likes the ease of recording (up to two minutes), and the continuous tape that can be used over and over. And the unit is so well protected that we haven't had to take one look at it. Rather gratifying for us, too, to have a part in such a worthy service (not to mention the added revenue).

Yes, I was really 'way off base on this one. Listen to this! Even though 30 callers can listen at one time, the response has been so great that the Club has asked us to install another line and machine to handle the volume. I understand this often happens when this kind of service is offered.

Had to tell you about this -- even if it costs me a steak! You'll want to know about it, in case any of our other subscribers ask for this service.

Dave



Messages can be recorded from any distance by remote "mike"

Published by

AUTOMATIC ELECTRIC

ORIGINATORS OF THE DIAL TELEPHONE

Chicago, U.S.A.

John Sharkey, *Editor*

INDEX TO ADVERTISING

Acme Visible Records, Inc.
Acorn Insulated Wire Co. 72
Alaphaduct Wire & Cable Co. 72, 76
Aluminum Co. of America
American Creosoting Co.
American Tel. & Tel. Co. 48
Ansonia Wire & Cable Co.
Anaconda Wire & Cable Co. 11
Armstrong Cork Co.
Arrow Fastener Co.
Automatic Electric Sales Corp. 4, 12-13, 32, 60-61, 77-84

Bakelite Co.
Barber-Greene Co.
Bartlett Mfg. Co.
Bashlin Co., W. M. 72
Benner-Nawman Co.
Berry & Co., L. M.
Bohnsack Equip. Co.
Buckeye Telephone & Supply Co. 56, 74
Burgess-Manning Co. 56

C & D Batteries, Inc.
Cable Spinning Equipment Co. 85
Calculagraph Co., Inc. 70
Carter Motor Co. 67
Chance Co., A. B.
Collins Radio
Columbus-McKinnon Chain Corp. 65
Columbia Electric Mfg. Co. 65
Commercial Cord & Supply Co. 72
Communi-Catering 71
Cook Electric Co. 53, 72
Copperweld Steel Co.
Crane Carl C. 71
Cullom & Ghertner Co. 71

Davis Construction Co. 71
Donnelley & Sons, R. R.

Executone, Inc. 41
Exide Industrial Div'n.
The Electric Storage Battery Co. 68

Fitchburg Engr. Corp.

General Cable Corp.
General Electric Co.
General Insulated Wire Co., Inc. 6
General Machine Products, Inc. 67
General Telephone Directory Co. 2, 72
Giant Mfg. Co. 72
Gould National Batteries, Inc.
Graybar Electric Co.
Greenlee Tool Co.
Gladwin Plastics, Inc.

Harris-McBurney Co. 71
Henkels & McCoy 71, 74
Highway Trailer Co. 72
Holtzer-Cabot 17

International Business Machines
Independent Tel. Repair Co. 74
Indiana Steel & Wire Co. 26
International Harvester Co.
Instrument Laboratories

Katolight Corp.
Kearney, James R., Corp.
Kellogg Switchboard & Supply Co. 18-19, 20-21
Kennecott Wire & Cable Corp.
Keystone Steel & Wire Co.
King, W. T.
Klein & Sons, Mathias 28
Koiled Kords, Inc.

Leich Sales Corp. 38-39
Lindsay Telephone Supply Co. 65
Line Materials Co. —
A McGraw Electric Co. Div.
Lorain Products Corp. 68

Markwell Mfg. Co.
McCabe Powers Auto Body Co.
McNulty, Dan
Minnesota Mining & Manufacturing Co.
Mitchell, Jay G. 71
Murphy Engineering Laboratories, Inc.

Natco Corp.
National Standard Corp. 55
National Tel. Supply Co. 88
Neale Construction Co. 71
North Electric Co. 24-25
Northwest Radio & Television School

Overton Co.
Owens Illinois Glass Co.

Page & Hill, Inc.
Philco Corp.
Plastic Wire & Cable
Porcelain Products Inc. 72
Prairie Schooner Inc.
Preformed Line Products Co. 68, 87
Power Tools Corp.

Radio Frequency Lab.
Raytheon Manufacturing Co.
Reliable Electric Co. 15, 72
Remington Rand, Inc.
Rex Corp.
Reynolds Metals Co.
Roll-A-Reel Corp.
Runzel Cord & Wire Co. 72

Schauer Manufacturing Corp.
Seymour Smith & Son, Inc.
Sherron Metallic Corp. 72
Sloan, Cook & Lowe
Stahl Metal Products 56, 57
Stewart Bros.
Stromberg-Carlson Co. 30, 44-45, 64, 68-69
Sturgis Posture Chair 26
Superior Cable Corp. 3
Suttle Equipment Co. 71

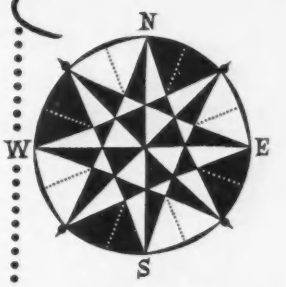
Taylor-Colquitt Co. 72
Tel-E-Lect Products, Inc. 7, 72
Teletype, Inc.
Telephone Accounting Services
Telephone Answering & Recording Corp.
Telephone Engineer Publishing Corp. 43, 54
Telephone Equipment Co. 75
Telephone & Power Supply Co.
Telephone Repair & Supply Co. 72
Telephone Supply Corp.
Telkor, Inc.
Texas Creosoting Co. 72

Universal Controls, Inc. 64
U. S. Independent Tel. Assoc. 29
U. S. Steel Co. (Chem. Div.)
U. S. Steel 27

Western Electric Co.
Whitaker Reel Mfg. Co. 75
Whitney Blake Co. 22-23, 72
Williams, Geo. E., Co.
Williams Inspection Co., A. W. 71
Wyoming Valley Equip. Co.

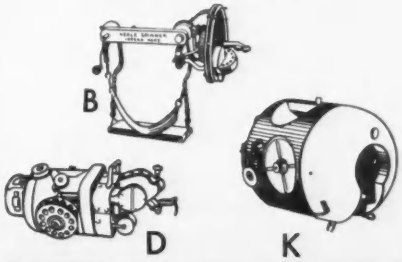
York Hoover Corp.

TO THE NORTH
TO THE EAST
TO THE SOUTH
TO THE WEST



YES, IN EVERY DIRECTION YOU'LL SEE NEALE SPINNERS OUT PERFORMING ALL OTHERS —

—THE RESULT OF YEARS OF EXPERIENCE IN THE FIELD PERFECT DESIGN THE FINEST MATERIALS SUPERB WORKMANSHIP AND THE HIGHEST OF MANUFACTURING STANDARDS



CABLE SPINNING EQUIPMENT CO.
3100 TOPEKA AVE.
TOPEKA KANSAS
Serving the growing Independent telephone industry
UNITED STATES INDEPENDENT TELEPHONE ASSOCIATION
OVERSEAS SALES:
Ericsson Corp. of New York
Automatic Electric of Canada
Pirelli of Great Britain

THE BACK OF THE BOOK

By JOHN G. REYNOLDS

Bullets and Insulators

RECENT issue of "Electrical World" reports that a group of business executives participating in a "brainstorming" session came up with a few novel solutions to the problem of insulator damage during hunting seasons.

Dr. B. B. Goldner, director of the School of Creative Thinking at LaSalle College, Philadelphia, mailed the following list to Philadelphia Electric Co. PE estimates conservatively that it spends $25,000 a year replacing insulators shot off poles. Nationally the damage is said to total $1 million a year.

Here are suggestions that came from the free-thinking session:

(1) Use unbreakable insulators; (2) make insulators smaller; (3) design insulators to deflect bullets; (4) put up decoys which explode with a bang, thus inviting target practice; (5) send a convincing letter to each hunter along with his license; (6) paint insulators baby-blue to blend with the sky; (7) mold insulators in the shape of a baby — who would shoot a baby? (8) use bullet-proof covers; (9) write convincing articles for sports magazines; (10) make insulators larger (easy targets are no challenge); (11) use newspaper ads to educate hunters during the season; (12) keep hunters away by law from sections having important power lines; (13) raise license fees to cover possible damage; (14) raise electric bills of hunters only.

Cause For Comment

READERSHIP of Bell News, published by Bell Telephone Co., of Canada, appears to be a good 100 per cent of circulation based on the number of calls the editors received regarding a "blooper" in a recent issue, which reported that a happy couple were "*married decently*" instead of "*married recently*."

Nothing — "but nothing we ever did caused SO much comment," commented the editors.

Mystery Solved

ACCORDING to our Kentucky Correspondent a Louisville trouble shooter had his own share of trouble last month after a subscriber told him — "We never leave the receiver off the hook. We never answer any ring on the party line but our own."

The telephone rang. Into the room bounded *Lindy*, the family's sheep dog. With a sweep of his paw, Lindy knocked the telephone from its stand, the receiver flying to the end of the cord.

There's no more trouble — the telephone is now out of Lindy's battering reach.

"Keep It Clean"

TO HUSBANDS who complain that their wives always are yak-yaking on the telephone, the Federal Communications Commission can report that men do it, too. In the Rockport, Texas region, they're talking about shrimp boat operators. Tom B. Wagner, engineer in charge of the Kingsville FCC office, says abuses of the airways by radio include idle talk, dirty stories and gossip.

Sometimes, he said, emergency messages can't get through the chatter. Wagner reported that boats in the Gulf of Mexico are being monitored and flagrant violators are being investigated. A shrimper — or anyone else — who tells a dirty story over the air could be fined $10,000 and serve a year in prison.

"Busy Number"

CHICAGO'S busiest telephone number rang 20,304,298 times last year. Calls to WE 4-1212 for weather information added up to the second highest yearly total in the history of the service. Banner year was 1955 with nearly 23,000,000 calls. The Weather Bureau attributed last year's drop-off to the fact that there were fewer days of extreme heat or cold.

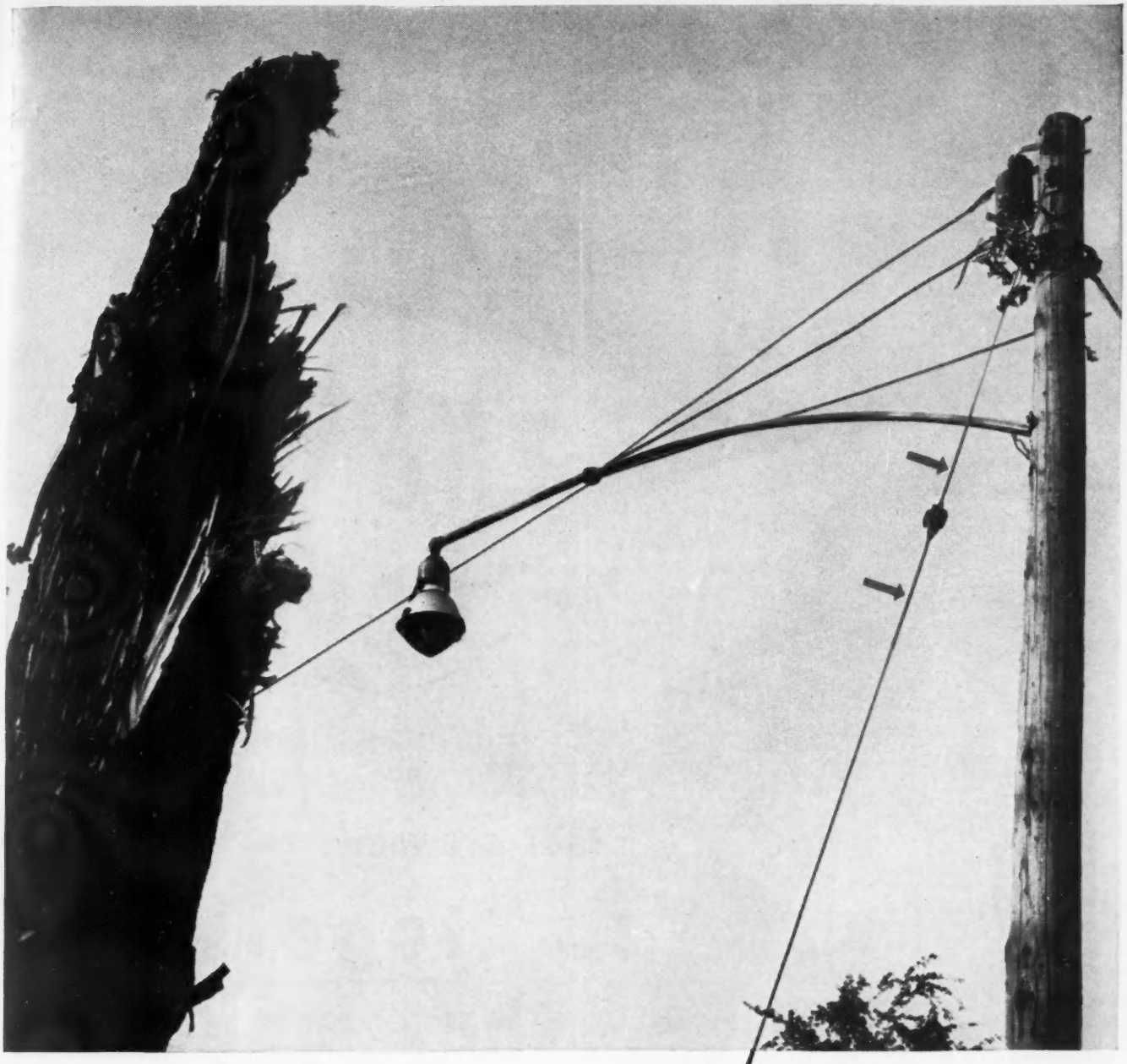
Unusual weather sets the phone to ringing. The daily average of calls last year was nearly 55,000, but on April 3, when a reading of 81 set a record high for that date, calls totaled 165,114.

"Just To Say 'Howdy'"

TOLL business was good on New Year's eve but we understand some sort of a record was established when a Denver, Colo., swain called a Raleigh, N. C., lass person-to-person. Our informer tells us the call began at 10:45 p.m., December 31, and lasted until 4:45 a.m., January 1, and the charge was $162. And, said the young lady, when questioned about the call — "it was about nothing in particular."

About Elvis

BY WAY of *Southern Telephone News* we learn that Elvis Presley is sold on colored telephones. In fact, the "Rock 'n Roll" king has some four colored sets in his home on Audubon Drive in Memphis, Tenn. Recently, when he was having his picture taken with a colored phone, he was asked to change the cord because it was somewhat twisted. "No, leave it that way," he said. "This is the way I talk."



75 - 100 MPH Wind Rips off Tree

PLP *GUY-GRIP* Dead-Ends Stand Firm

Nature provided the test. Hurricane-strength winds—75-100 miles an hour—snapped off the top half of a huge elm tree ... and hurled it against both pole and guy. After the debris was removed... the picture told its own dramatic story. Here's graphic evidence that today's best answer to any guying problem... subjected to any kind of condition... is PLP Guy-Grip dead-ends.

Dept. No. TR1A

Made in accordance with or for use under U. S. Patent No. 2,761,273; other patents pending.

PX – 77

PREFORMED LINE PRODUCTS COMPANY

5349 St. Clair Avenue Cleveland 3, Ohio

TELEPHONE: CLEVELAND EXPRESS 1-3571

Nicopress®

The Tool and the Sleeve

that are made to work together

together

they make the perfect splice

The National Telephone Supply Company

5100 SUPERIOR AVENUE • CLEVELAND 3, OHIO

Canadian Mfr.—N. SLATER CO., LTD., HAMILTON, ONT., CANADA

Export Distributor—INTERNATIONAL STANDARD ELECTRIC CORP., NEW YORK, N. Y.

Nicopress is the Registered Trade Mark of The National Telephone Supply Company